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RUN

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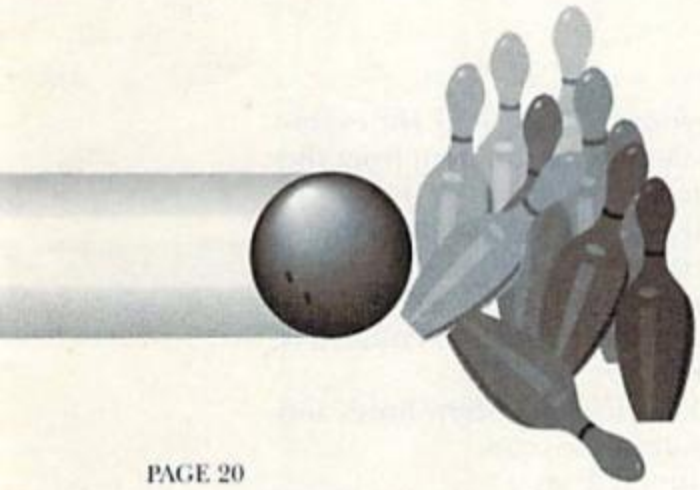

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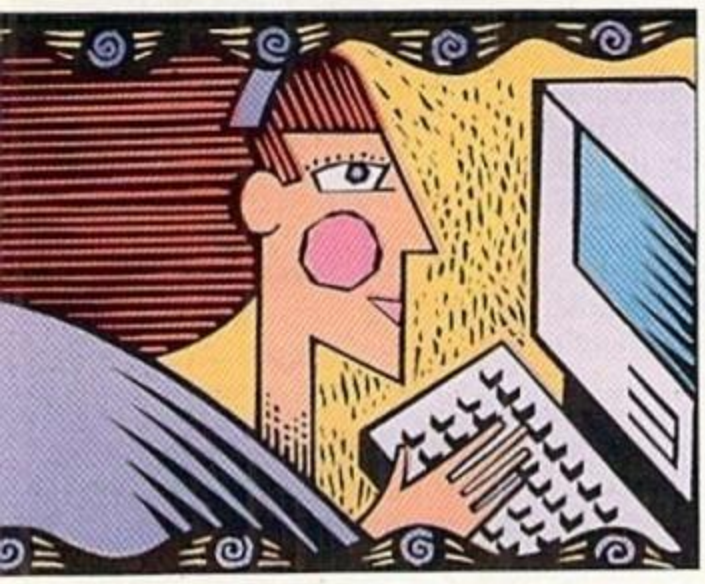

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*** Here in New England, no one stays inside when the mercury tops 65°. If you're too busy enjoying the sunshine to type in these programs, order the July/August ReRUN disk. Just call 800-824-5499.**

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RUNning Ruminations

Paper Chase

Ever get the feeling your eyes are playing tricks on you? For example, you could swear that this issue somehow looks different from the previous issue, which looked different from the one before that.

Well, before you run to your local optician, you should know that *RUN* has been experimenting with several kinds of paper in the past few issues. We're investigating ways to reduce our costs, without compromising the high quality our readers expect from *RUN*. Problem is, we haven't decided which kind of paper to use.

This column is printed on coated stock (which has a shiny finish and reproduces colors well). The reason publishers use coated paper, which is more expensive, is to promote an image of quality to attract both advertisers and readers.

If the magazine looks different to you, don't fault your eyeglasses.

Our previous issue (May/June '92) was printed on uncoated stock (less expensive, and doesn't reproduce colors as well).Uncoated stock features a matte finish, which, because it eliminates glare, is easier to read. The two papers also differ in their opacity (the degree to which you can see through the paper to what's printed on the other side).

You don't have to be too discerning to note the difference. While some argue that we're inching toward a paperless society, paper grade remains important to many readers. To others, it's a non-issue.

We'll continue to experiment with paper over the next few issues and carefully weigh the cost/quality ratio. Which type of paper do *you* prefer? If you feel strongly about it, drop us a line.

While we experiment with magazine format, the content remains as strong as ever, as evidenced by this issue's lineup. First, turn directly to page 14 to discover the answer to perhaps the best-kept secret in computing. You'll learn how you can take advantage of a treasure trove of inexpensive, but high-quality, software. Selecting the best of the bunch is difficult, but we list our ten top picks from literally thousands of programs.

Next, go directly to the GEOS tutorial, where you'll find expert advice on how you can take full advantage of this exciting graphics environment. GEOS remains one of the best reasons to be a Commodore user. Then proceed to the article on taking care of your computer system. Follow the tips provided to ensure your peace of mind and your computer's longevity and ease of use.

Add a mix of software and hardware reviews, useful and entertaining type-in programs and lots more, and you have an issue bursting at the seams with information you've got to see to believe.

We feel that this issue's content reinforces *RUN*'s commitment to its readers. Blame the economy, blame the stars, but don't blame *RUN* if you're not getting value from your Commodore.

NEXT ISSUE: *RUN* focuses its spotlight on GEOS, with tips, tutorials and other helpful articles about how you can get the most from GEOS. For non-GEOS users, the lineup will include interesting program listings to type in, reviews of a new low-cost printer and the latest software, as well as the usual mix of tricks, tips and questions answered. Be sure to stay tuned.

Dennis Brisson

Dennis Brisson
Editor-in-Chief

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MAIL RUN

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ARMED AND DANGEROUS (FINALLY)

I really didn't plan on making this a complimentary letter, I really didn't. After ordering RAMLink and a JiffyDOS drive ROM for my 1541 II, I patiently waited for UPS to bring me my little box of joy. And waited. And waited. When the box finally arrived—almost two months after I placed the order—I was fuming.

I set about installing JiffyDOS in my drive (a surprisingly painless procedure) and setting up RAMLink (less painless, but not bad overall).

Now that all of this is working, I just can't bring myself to complain as I had planned. RAMLink is incredible! Booting up the machine *and* GEOS takes all of 10 seconds (if I bother to set up the date and time). All my files are right there waiting on a one-megabyte partition. I don't even turn on a drive most of the time.

JiffyDOS is just as impressive as the RAMLink. The faster loading time is great, but the DOS wedge is truly fantastic.

In spite of the wait, I am 200 percent satisfied with these products. They turn a great little computer into a heavily armed killer. (IBM? Amiga? Why bother!)

—ANDY NIEBRUGGE, YANKTON, SD

IF THE COMPUTER FITS, USE IT

In "RUN for the Money?" (Mail RUN, March/April '92) Mr. Zemba raises some excellent points, but misses the main point of personal computing.

The reality is that you buy and use the computer that is right for you, but you don't expect it to be state of the art forever. If you're tired of hearing 8-bit bashing, don't listen. I use my C-128 frequently, and it serves my purposes very well. We also have an Amiga 500, which my son uses, and an Amiga 3000, which my wife uses for her home business; the C-128 is not appropriate for her needs.

Sure, someday I'll get rid of my trusty C-128, but it will be when I no longer have a need for it, not because it isn't the hottest machine on the market. I have no problem dumping to our Imagewriter and the quality is more than acceptable for my needs. And when I want to get fancy I use our LaserJet.

If you think you can get a great deal on a 16-bit SX-386 clone, buy one! Don't forget, though, you'll also have to buy an operating system (such as MS-DOS), a graphical user interface (such as Windows), a VGA card, a sound card, a hard drive interface card, a mouse and a minimum of 4MB of RAM for multitasking. I use a DX-486 and speak from experience: To use any of the newer software, consider getting a hard drive larger than 85MB, and memory in excess of 8MB.

Care to make that comparison again?

In spite of what you may think, *RUN* happens to be the only national (actually, international) magazine actively supporting 8-bit users, which is why I subscribe. If they happen to have a firm grasp on reality and publish their observations and opinions, regardless of whether we agree with them or not, then I certainly believe they have that right. (Well, okay, they don't *always* have a firm grasp on reality.)

—JOHN COMERFORD, WOODLAND HILLS, CA

ARTISTIC COMPATIBILITY

I'm an artist who owns a C-64 with a Koala Pad and a paint program. I intend to purchase an Amiga, but I don't want to discard my 64. How, as you suggest, can the C-64 be used in conjunction with the Amiga?

—BRUCE MORGAN, POLLOCK PINES, CA

Our first suggestion is to make the most of both systems. Keep your C-64 up and running, especially for the core applications you have come to love and depend upon, and spend your time with the Amiga learning to use its excellent graphics capabilities.

On the subject of using the two in conjunction: First, you can easily translate word processing files back and forth between the C-64 and the Amiga. You will need a conversion program and a 1581 drive to accommodate the 3½-inch Amiga disks. Second, you can also translate C-64 graphics files, including your Koala images, to an Amiga-compatible format without losing any quality. Realize, however, that Amiga graphics files are much more complex than C-64 files, so there are strict limitations when converting Amiga graphics to Commodore format.

For details, see "Share and Share Alike," by Tim Walsh, and "Converting Graphics Files," by Paul Hughes, both in the September/October 1991 issue of RUN.

—EDITORS

CURLY BRACES CAUSE CONFUSION

I can't understand one thing in your programs. In the middle of one of your programs, you have this in the line:

```
6 CT=Ø:PRINT"{SHIFT CLR}":REM*56
```

What do the braces mean?

—DANIEL PAYNE, GREAT FALLS, MT

The curly braces in our program listings mean "perform the function described within these braces." In your example, you would type the quotation mark, then hold down the SHIFT key and press the CLEAR key (marked CLR HOME on your keyboard), then type the quotation mark again and press RETURN. You do not *type in the curly braces!*

For more examples using curly braces, and detailed instructions on typing in program listings, see the Checksum on page 45. We have recently rewritten the Checksum instructions to answer the questions that most first-timers have when typing in program listings. (Note: The Checksum program itself has not changed.)

—EDITORS

FUN GRAPHICS SUCCESS STORY

Last fall I needed a program to make forms, but I couldn't

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find one. *RUN* to the rescue! Your November/December 1991 issue described two form creation programs. But again, disappointment—one was no longer available and no one had heard of the other, Fun Graphics Machine.

Once again, *RUN* to the rescue! In Coming Attractions, I read you were going to review Fun Graphics Machine in the March/April issue, and I found an ad for the program in your classified section. A quick call, priority mail, and some nice people had FGM in my hands the next day, and—WOW!

FGM makes the graphics and fonts stand out from the page! The thorough manual and inexpensive keyboard overlay had me—a three-thumbed newcomer—up and running in no time. I soon had a set of forms made up exactly to my specifications. The last print program I bought required the Amiga version for smoothing. Fun Graphics Machine has a smoothing routine built in. It's excellent.

—Dick Kimker, Coos Bay, OR

Me and My 64: Still Going Steady

I found Warren Buchanan's article, "ROM Is Where the Heart Is," (March/April) very entertaining. It touched on the deep loyalty we die-hard C-64 owners have for our computers.

I have often contemplated "upgrading," but have always stopped short, opting instead to dig deeper into my C-64. Be it software, an REU or some other add on, I see my computer as a "work in progress," always growing and improving.

As president of my local user's group, I have seen many members buy Amigas, but the C-64 and 128 continue to be the computers of choice. The lack of new software is a major concern, but with the thousands of already released programs, an old title, rediscovered, can be just as entertaining or useful.

—Mitch L. Durdle, Galesburg, IL

Accolades and Remonstrances

I'll start by saying thanks for sticking with us C-64/128 users. Based on your reviews I have purchased a lot of stuff for my Commodore, including RAMLink, GateWay and JiffyDOS. (For the money I've spent I could have made a big down payment on an IBM, so it's your fault IBM is in such dire straits.) I don't program, and I doubt I ever will, so the issue of software availability is very important to me. Many of your advertisers have benefited from my purchases simply because of their ads.

For all this praise, I also have a complaint. Too often, when someone who is obviously a newcomer to computing asks a question in Commodore Clinic or Mail RUN, your answers are incomplete and lack content. Don't cut people short.

I would finally like to add a pitch for the new Perfect Print LQ for GEOS, from Creative Micro Designs: At last there is a simple and inexpensive way to print letter quality documents.

—Richard Warwick, Reno, NV

He's Become a Power User

Based upon your advice, I put my old C-64 back into action. I replaced the 1541 disk drive with a 1571, retaining the 1541 as a backup. I bought an REU, collected useful software from *RUN*, its advertisers and military base exchanges. Of course, I also subscribed to *RUN* and to ReRUN.

For a year after that, I used the C-64 primarily to write letters. Then I joined the Coast Guard Auxiliary, and in December I took over editing and producing the monthly newsletter *Flotilla*. How was I to do the job? No problem. I have a C-64, Print Shop, Newsroom, a word processing program, plus some utilities and accessories.

Recently I turned over the old Commodore 64 and the 1541 drive to my teenage daughter. (She loves to run games right when I need to get work done.) I replaced it with a new 64C that I found in the Sears catalog for $150. UPS delivered it on Wednesday. Thank you for the encouragement.

—Sherwood Stutz, Havelock, NC

TPUG for More Than PETs

Last year after *RUN* published a list of user's groups we received at least a dozen inquiries from PET owners. What isn't obvious from our name, *Toronto PET User's Group*, is that TPUG isn't just for PET owners. We try to support essentially everything Commodore has built. Well, almost: We don't support CDTV or Amiga UNIX yet. We have Plus/4 programs, but none explicitly for the C-16, and we have nothing for the Max or the new video game sold in Europe.

—Ian McIntosh, Willowdale, ONT

Thanks for the clarification. TPUG is one of the most respected Commodore user's groups out there. TPUG accepts mail-in memberships, and is an excellent resource for all Commodore users.

—Editors ■

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SOFTWARE GALLERY

Commodore versions of your favorite coin-op arcade games, a spectacular simulation and grist for the grey matter.

By JOHN RYAN

THE SIMPSONS ARCADE GAME.....B–

Fans of the Coin-Op Original Won't Be Disappointed

Are you a fan of the Itchy and Scratchy show? When you think of clowns does the name Krusty come to mind? Perhaps you think that the "Bart Man" song should have been nominated for a Grammy.

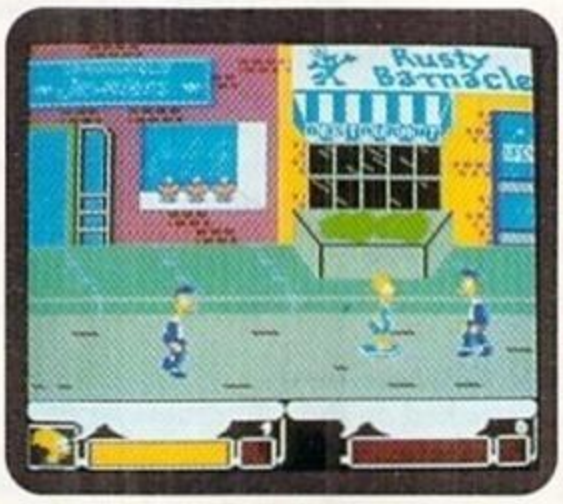
If you can answer yes to any of these questions, then you are undoubtedly a Simpsons fanatic. If that's the case, you'll want to get this game. Long available for Nintendo systems, the Simpsons arcade game has finally made its C-64 debut.

The scenario is simple: While taking a leisurely stroll through Springfield, the Simpson family literally stumbles into a thief making his getaway from a jewelry store heist. The thief drops a pacifier-shaped diamond which, naturally, Maggie finds and claims for her own. The thief snatches Maggie and makes his getaway. It is your job to recover Maggie from the clutches of this villain.

You can play the role of any one of the Simpsons: Bart, Lisa, Marge or Homer. Each character has special abilities to deal with the plethora of bad guys: Bart has his trusty skateboard, Lisa her jump rope, Marge metes out justice with a vacuum cleaner, and Homer, perhaps the sorriest hero of all, punches his way through the streets of Springfield with his rock-muscled arms (yeah, right).

As you maneuver your character through the scrolling streets of Springfield, you'll run across street toughs, executive yes-men, ghosts, giants and a host of other nasties. Along the way you'll find items to throw or use as weapons—even slingshots, one of Bart's favorite weapons. There are eight levels to play through, including Krustyland, Moe's Tavern and the Burns Mansion. You'll have to defeat a major foe on each level to advance to the next.

The Simpsons opening scene throws up some of the best full-screen animated graphics I've seen for the C-64. In fact, the graphics look a lot like the opening scenes on the Simpsons's television series.



Bart's skateboard makes a great weapon in The Simpsons Arcade Game by Konami.

The full-screen graphics of the game itself, while not particularly remarkable, do a fair job of imitating the familiar style of Matt Groening, the artist who created the Simpsons cartoon. For the most part, the characters are well drawn and true to form. Equally well done is the Simpsons's soundtrack that we have all come to love or loathe, as the case may be.

My only real disappointment with this game is its rather sloppy joystick operation. I found the character's response time a little slow as you move, jump or attack. Accordingly, this slow response can cost you precious lives in the early stages of the game. Moreover—and I'll not muse on the motives—it also seems that the damage you take from the main enemy on each level is rather excessive. You'll have to rely on quick thinking and coordination to advance.

All in all, the Simpsons is a game that will excite most fans. The loading times are bearable and two-player gaming is supported. The Simpsons is no piece of cake, though, so plan on spending a lot of time getting to the last level. Whatever the case, don't have a cow, man.

($49.95/C-64. Konami, 900 Deerfield Parkway, Buffalo Grove, IL 60089-4510)

SOFTWARE REPORT CARD

Outstanding	A
Good	B
Average	C
Below Average	D
Crummy	F

TMNT: THE ARCADE GAME...B+

Teenage Mutant Ninja Turtles Return to the C-64

Put the pizza order on hold! April O'Neil has been abducted by Shredder's Foot Clan. Now it's up to four lovable teenage turtles to come to her rescue.

Turtles? Yes, by now all of you should be familiar with the Teenage Mutant Ninja Turtles (TMNT). There's Leonardo, whose Katana blades are the next best thing to Ginzu knives; Raphael, armed with a mean pair of Sai daggers; Donatello, the most intelligent turtle of the bunch, wielding his head-splitting Bo stick; and last, there's Michaelangelo, who can swing nunchakus with the best of them.

This time, Shredder and his feeble-minded minions have whisked April away to some secret location in the city and you'll have to take one of the turtles through eight levels of shell-cracking action to get her back.

If you've ever had the opportunity to play the arcade version of TMNT, then you'll immediately feel comfortable with this superb translation. Admittedly, the C-64 version does not look quite as pretty, nor does it have all the options and graphics of the arcade or Nintendo versions. Nonetheless, it's good enough that you'll soon overlook any lacking features.

As one of the turtles, you guide your hero through the game's full-screen scrolling graphics. This adventure is no leisurely stroll. From the start you're beset by members of the notorious Foot Clan. Never fear. If you're Bruce Lee with a joystick, you'll make mincemeat of them; your turtle can drop-kick, attack, slash and whirl about the screen

Continued on p. 46.

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MAGIC

Save the contents of your screen to disk, keep track of your disk drives and flash messages in either mode.

By TIM WALSH

$5EE SCREEN PRINTER 64

While recently using the assembly language monitor Supermon v2, I thought it would be nice to write a memory-resident screen print utility. That way, I could make a hard copy of the assembly code I was developing.

Screen Print 64 is the result of my efforts. This program lets you send the current screen to the printer with a press of the CONTROL and LEFT-ARROW keys. After you've typed in the listing using *RUN*'s Checksum on page 45 and saved it to disk, run it to activate the CONTROL/LEFT-ARROW sequence.

```
Ø REM SCREEN PRINT 64 - KELLY KIPFERL
                                        :REM*249
1Ø FOR T=49152 TO 49368:READ D:CK=CK+D:POK
   E T,D:NEXT                           :REM*84
2Ø IF CK <> 26569 THEN PRINT"ERROR IN DATA
   ...":END                             :REM*9Ø
3Ø PRINTCHR$(147)"PRESS CONTROL/BACKARROW
   TO PRINT"                            :REM*15Ø
4Ø SYS 49329                            :REM*241
5Ø DATA 165,2Ø3,2Ø5,59,3,24Ø,7,141,59,3,2Ø
   1,57,24Ø,3,1Ø8,254,3,169,Ø           :REM*94
6Ø DATA 162,8,16Ø,62,32,189,255,169,1,162,
   4,16Ø,255,32,186,255,32,192          :REM*89
7Ø DATA 255,173,136,2,133,255,169,Ø,133,25
   4,141,253,3,166,184,32,2Ø1           :REM*189
8Ø DATA 255,162,Ø,16Ø,Ø,177,254,2Ø1,128,14
   4,6,141,253,3,56,233,128,2Ø1         :REM*171
9Ø DATA 96,144,7,24,1Ø5,64,2Ø1,96,176,18,2
   Ø1,64,144,7,24,1Ø5,32,2Ø1,64         :REM*231
1ØØ DATA 176,7,2Ø1,32,176,3,24,1Ø5,64,141,
    252,3,173,253,3,2Ø1,Ø,24Ø,5         :REM*121
11Ø DATA 169,18,32,21Ø,255,173,252,3,32,21
    Ø,255,173,253,3,2Ø1,Ø,24Ø,1Ø        :REM*11Ø
12Ø DATA 169,146,32,21Ø,255,169,Ø,141,253,
    3,2ØØ,192,4Ø,144,172,169,13,32       :REM*99
13Ø DATA 21Ø,255,24,165,254,1Ø5,4Ø,133,254
    ,165,255,1Ø5,Ø,133,255,232,224       :REM*179
14Ø DATA 25,144,147,32,2Ø4,255,169,1,32,19
    5,255,1Ø8,254,3,173,2Ø,3,141         :REM*183
15Ø DATA 254,3,173,21,3,141,255,3,12Ø,169,
    Ø,141,2Ø,3,169,192,141,21,3,88       :REM*94
16Ø DATA 96,12Ø,173,254,3,141,2Ø,3,173,255
    ,3,141,21,3,88,96                    :REM*151
```

—KELLY KIPFERL, HORSEHEADS, NY

$5EF DRIVE FINDER 64/128

If you're looking to add a unique drive identifying routine to your programs, Drive Finder 64 is for you. It's a one-of-a-kind program that shows how many drives are connected to your Commodore 64 or 128.

After typing in the program using *RUN*'s Checksum on page 45 and saving it to disk, you can run it in either 64 or 128 mode. The program then reads and lists each drive connected to your computer and its type, when identifiable, all in the span of a few seconds.

```
Ø REM DRIVE FINDER 64/128 - WARD SHRAKE
                                        :REM*69
1Ø DIM DD(11),DD$(11):PRINT"CURRENT DRIVE
   IS DEVICE";PEEK(186);"{CRSR LF}.{CRSR D
   N}"                                  :REM*72
2Ø FORDD=8 TO 11:OPEN 15,DD,15:CLOSE 15
                                        :REM*37
3Ø PRINT"DEVICE NUMBER ";RIGHT$(STR$(DD),2
   );                                   :REM*13Ø
4Ø DD(DD)=ABS(ST)                       :REM*155
5Ø IFDD(DD)<125THENPRINT" IS PRESENT."
                                        :REM*1Ø1
6Ø IFDD(DD)>124THENPRINT" IS NOT HOOKED UP
   ."                                   :REM*89
7Ø NEXT                                 :REM*2ØØ
8Ø PRINT"PLEASE WAIT..."                :REM*2Ø9
9Ø FORDD=8TO11                          :REM*2Ø2
1ØØ IFDD(DD)>124THEN17Ø                 :REM*16Ø
11Ø OPEN15,DD,15,"U:"                    :REM*45
12Ø TI$="ØØØØØØ"                        :REM*116
13Ø IFTI$<"ØØØØØ2"THEN13Ø               :REM*1Ø4
14Ø INPUT#15,X,DD$(DD):CLOSE15          :REM*132
15Ø IFDD$(DD)="OK"THENPRINT"TWO DRIVE";DD;
    "{CRSR LF}'S FOUND, MODELS UNSURE.":GO
    TO17Ø                               :REM*1Ø7
16Ø PRINT"DISK DRIVE";RIGHT$(STR$(DD),2);"
     IS A MODEL ";RIGHT$(DD$(DD),4);"."
                                        :REM*133
17Ø NEXT                                 :REM*45
```

—WARD SHRAKE, COVINA, CA

$5FØ FLASHING PRINT 64/128

You may occasionally notice that some programs have messages that flash on the screen until a key is pressed or some other action is performed. This routine prints a message on the screen that flashes on and off in a reversed print until a key is pressed. By studying the lines of Basic code used to print the routine and the for/next loop that cycles the reversed text, you will see that it's a simple process. Use this routine in your own programs to provide a lively bit of animated text.

```
Ø REM FLASHING PRINT 64/128 - RAFAEL J. DI
  AZ                                    :REM*216
1Ø R$=CHR$(18):S$="PRESS A KEY!"         :REM*85
2Ø PRINTR$;S$                           :REM*37
3Ø GET A$:IF A$="" THEN FOR I=1 TO 35Ø:NEX
   T:IF A$<>"" THEN 5Ø                  :REM*176
4Ø PRINT"{CRSR UP}";:PRINTS$:IF A$="" THEN
    FOR I=1 TO 2ØØ:NEXT:PRINT"{CRSR UP}";:
   GOTO 2Ø                              :REM*197
5Ø IF A$<>"" THEN PRINT"THANK YOU!"
                                        :REM*232
```

—RAFAEL DIAZ, HOFFMAN ESTATES, IL ■

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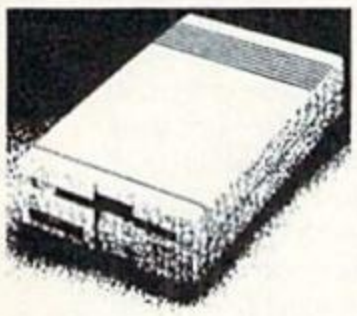

Our intrepid buyers have been spelunking in Commodore's Caverns in search of long-lost bargains. A recent expedition has uncovered a "lode" of treasured 1581 drives.

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News and New Products

Commodore computer users have some unique needs. Here's a selection of the latest gadgets for using your Commodore safely and efficiently.

By JANICE CROTTY

Get It Together

SCOTTS VALLEY, CA—Finally, Commodore users can organize their computer cords!

Most cord control products are not suited to Commodore computer systems. They typically hold only cords of a specific diameter, and they require that all of the cords attach at a specific point on your work table.

The (\$14.95) from Get Organized takes a different approach, channeling unruly cords through flexible tubing. The cords remain accessible, and color-coded labels make it easy to reconnect your equipment by matching colors. And, if you have pets, Cord Control will make your equipment less vulnerable to chewing.

The kit includes 72 inches of flexible tubing, six reusable beaded ties and 32 adhesive colored labels.

Write to Get Organized at 328 Canham Road, Scotts Valley, CA 95066. Or call 408-438-0259.

A Handy Solution

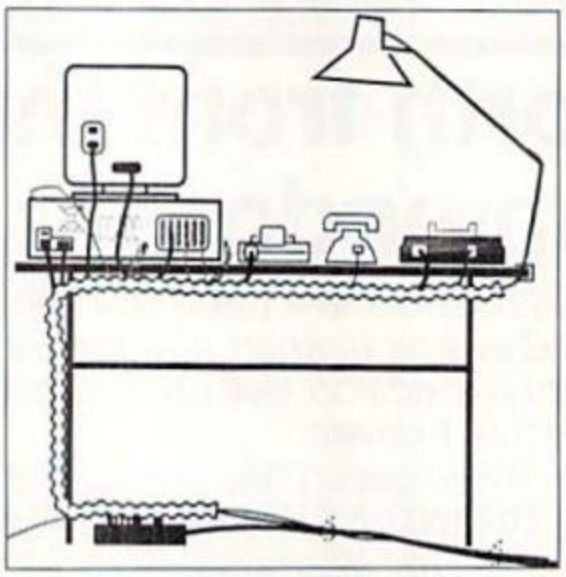
HILLSBORO, OR—Commodore users who spend long hours tapping at their keyboard or scooting about their mousepads should note that poor hand and wrist posture can lead to carpal tunnel syndrome, a very painful disorder. If you have felt fatigue in your wrists and hands after typing, consider adding a wrist rest to your collection of peripherals.

Two of the newest wrist comfort products are **Type Ease** (\$29.95) and **Mouse Ease** (\$24.95) from Gered. Both products are upholstered in a soft machine washable fabric and come with two foam inserts for high or low adjustment.

For more information, contact Gered at 2401 N.E. Cornell Road #125, Hillsboro, OR 97124; 800-852-8727.

Ingenious Space Saver

JAFFREY, NH—I have discovered an interesting phenomenon: Commodore computer systems develop middle-age spread, with disk drives, cartridges, RAM expanders, disk boxes, printers and manuals stacking up everywhere. Who among us has room on our work table for papers?



Cables tuck neatly away with Cord Control.

Curtis Manufacturing has a solution: **Top Shelf** (\$19.95). It's a two-basket system equipped with levers and feet that let it perch on top of your monitor. It makes a great place to stash oft-used reference cards, "to do" working papers or whatever you need to put your hands on quickly. The Top Shelf system fits all monitors and assembles in a snap.

Top Shelf expands your workspace.

For more information, contact Curtis Manufacturing at 30 Fitzgerald Drive, Jaffrey, NH 03452.

Zap Free

CHICAGO, IL—Every time I bump the printer interface connection that plugs into my datasette port, static electricity reboots my computer. At the very least, the zap is annoying, but it could seriously damage my Commodore.

If you have trouble with static, consider setting your computer on an antistat mat, such as the new model from Computer Coverup, Inc. Their **Touch It** mat dissipates electrical charges through an 8-foot snap-on grounding cord. All you have to do is touch it (if you'll excuse the pun), and you're safe from the static zap.

The non-skid mat comes in several sizes, but even the smallest (\$16.96), measuring 10 inches by 20 inches, will accommodate Commodore keyboards.

You can contact Computer Coverup at 2230 S. Calumet, Chicago, IL 60616; 800-282-2541.

A Delicate Matter

SANTA ROSA, CA—Caution: Don't use window cleaner and paper towels on your Commodore's monitor! A very thin coating covers all optical glass, including your computer monitor, and that coating will be damaged by the ammonia and vinegar in glass cleaners, and by the wood fiber in paper. But who wants to keep a box of lense wipes on that already cluttered work table?

Fear not. You won't lose an inch of work space with **Soft Touch** by Optical Coating Laboratory, Inc. Soft Touch (\$5.95) is a lint-free natural chamois cloth that has been specially prepared for cleaning optical surfaces. The cloth can be washed and rubbed back into shape when it gets dirty, so it will last a long, long time.

For more information, contact OCLI at 2789 Northpoint Parkway, Santa Rosa, CA 95407; 800-545-OCLI. ■

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SHARE

When it comes to Commodore software, some of the best things

What's the best terminal program for the C-128? Which utility will convert and display your graphics best? Where can you find top-of-the-line printer drivers for GEOS?

The answers might surprise you, because you won't find these products on store shelves or in a mail order list, and they cost very little or *nothing at all*. Some of the best software available is public domain and shareware. These programs are found on bulletin boards and in user's group libraries, and while some of the files might have a few rough edges, they are becoming the star players in the Commodore line-up.

Where do all these great files come from? They're written by users like you, folks who saw software needs and filled them. Some of these programmers have started their own small companies, selling their work by mail order, but most would rather devote all their energies to programming. So, unless they happen to find a company eager to market their creations, these mavericks release their programs as public domain or shareware.

PD and Shareware: What's the Difference?

If a piece of work is said to be in the "public domain," it means the work is available for anyone to copy and use as they wish. Public domain (PD) programs can be given away to other users without breaking copyright laws. These files are free, but they're far from worthless.

Shareware files are similar to public domain files, except that they aren't free. When you try out a shareware program, you make a decision whether or not you want to keep it. If you decide it's worth keeping, you send a small fee to the author of the program. If it isn't for you, you simply erase the file. Some of the finest files around are shareware, and some of the best programmers use this method of distribution to support their efforts. It's sort of an honor system.

The concept of shareware could prove to software companies what copy protection opponents have been trying to point out for years: that given an honest opportunity to try out a program before buying it, users will be less inclined to make illegal copies. Unfortunately, things seldom work out that way. Many shareware authors report very little money ever being returned on their programs. While a file may be widely touted as a great piece of work, users often treat it as if it were free for the taking.

As a result, shareware authors have come up with various methods of protecting their rights, while still releasing their work for honest users to try and buy. Often a file will be released in a "demo" version that demonstrates a few features of the complete program. Upon receipt of the shareware fee, the author sends the user a complete version.

Some programmers apply their programming skill to protecting their work. One method is to rig the file with "time bomb" code that, after a certain number of uses, erases the program. If the fee is paid, a bomb-free version is sent out. Bob Pellegrino created his own security method called "Share-lok" to stop theft of his shareware programs. Users can audition his programs, but to get the full use out of them they need to get a "key" from Bob by paying the five-dollar shareware fee. This system works quite well.

Most shareware authors, however, forego protection schemes and rely on the honor system. Considering the low fee requested (usually less than $15), the excellent quality of the programs, and the fact that no fee need be paid until the file is tested, shareware files are excellent bargains.

Where Can You Find These Files?

The best source for Commodore public domain and shareware files is QuantumLink, with its comprehensive selection of over 35,000 files that can be downloaded for a small fee. And Q-Link's Search features make it fairly easy to find files.

The largest areas on QuantumLink are the GEOS section, the SID music files, and the graphics pictures and utilities. There are also libraries of games and game aids, programming utilities, text files, and so on. Whatever your interests, you're likely to find something great to download. For example, last month on a whim I tried a search of the libraries using the search word "ambush," because a friend and I play the World War II board game Ambush once in a while. I was surprised to discover a character generator someone had uploaded a few years back. Q-Link has thousands of treasures just waiting to be discovered.

I realize, however, that many users don't have access to Q-Link. Where else can you turn? The first place to go is a user's group. Most user's groups maintain a library of public domain disks you can buy for a minimal cost. Often, if there's a particular file you want, the group can track it down for you.

If you can't get a file from your local group, check out the bulletin board systems (BBSs) in your area. Most Commodore BBSs include a file section where you'll find PD and shareware files. Even boards that are run on other systems often keep libraries of Commodore files. Plus, other users you meet online will be able to help you find files or advise you on using the files they have.

Some companies sell public domain files by the diskfull. You'll find advertisements for them in *RUN*. The money they charge generally pays for collecting, copying

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WARE

in life are *free . . . or almost.*

By STEVE VANDER ARK

and advertising the files, and it's usually a small amount. Some of the larger user's groups, Fog International for example, sell their public domain disks through the mail. (See "Sources" at the end of this article.)

My Top Ten PD/Shareware Files

Once you start poking around for public domain or shareware files, brace yourself. There are *lots* of files out there. For example, if you were looking for a space adventure game for your C-64 on Q-Link, you'd be presented with 29 choices. If you add arcade games into the mix, you have more than 80 choices. It would be impossible to list the best files in every category. Heck, when I polled users on Q-Link to get their opinions about the best files of all time, the numero uno answer was "Gee, I dunno, there're so many."

So what was going to be a Top Ten Of All Time has become a list of the files I personally prefer. All the files on my list come from the Q-Link libraries, and therefore I've included the Q-Link file and uploader names to help you find them. Many are also found on GEnie, CompuServe and BBSs nationwide. Here, then, are my top ten picks:

1. AUTOGRAPH, by Fuzzy Fox (filename: "autograph.sda" uploader: "Fuzzy Fox"). Just about whatever kind of graphics screen you have, this little gem will decode and display for you. It's slick and easy to use, operated with keystrokes from its on-screen menu. You can also convert your file from one format to another.

2. DESTERM, by Matthew E. Desmond (filename: "desterm" uploader: "Ridgerunner"). If you ask most 128 users which terminal program is the best, you will very likely hear the answer "Desterm!" They're right. This shareware program requires a $25 fee, a bit steep by Commodore standards, but for a feature-laden package like this one, it's a steal. In fact, it's one of the best bargains in the Commodore world.

Want ANSI? You got it. Commodore C/G graphics? Yep. A plethora of protocols, baud rates up to 9600, emulations for various terminal configurations including European standards—you couldn't even begin to name all the features packed into this incredible program.

3. STEREOPLAYER, v10.3 by Mark A. Dickenson (filename: "stereo10.3a.sda" uploader: Mark AD I). If you want to play SID files, the most popular music file format around, you'll want Stereoplayer. It supports stereo as well as mono SIDs and will display the graphic or lyric files that accompany some music. With numerous extra commands, this player is a cut above the rest.

4. SCRAP IT by Terry Van Camp (filename: "scrap it v1.1" uploader: TerryV7). GEOS photo scraps were always limited in size to the area of the geoPaint window. This utility made full-page scraps possible. True, only geoPublish can handle scraps that big, but that's still enough to make Scrap It a must-have for any GEOS graphics user. ►

Downloading from Q-Link

The best place to find public domain and shareware files is Q-Link. Downloading from their extensive libraries is simplified with the command Download Specific File. You'll find this in the Commodore Software Showcase under Software Libraries. To use this function you need the exact filename and the exact screen name of the uploader (also called a handle), such as the filenames and handles I listed with the programs above. For best results, have a blank, formatted, single-sided disk handy before you log on; there's no easy way to format a disk online, and you'll waste a lot of expensive time shoving disks into your drive looking for enough space if you don't plan ahead.

Using the Download Specific File command results in a partial display of the information Q-Link maintains on the file. To see more, including the description provided by the uploader and any additional comments appended by users, use the Search from Software Libraries menu. When the prompt asks for your search word, use the filename or perhaps the uploader's handle. Sometimes the information you get from this type of search will help you decide whether this is the file that you were looking for.

Some files on Q-Link won't show up in the regular search or in the Commodore Software Showcase. For example, the programs in the Special Premium Library, maintained by *RUN* Magazine in their area of the Commodore Information Network (path: Commodore Information Network/News & Reference/*RUN* Magazine Online). As the name implies, various programs, such as RUN Paint and the GEOS collections, can be downloaded from the Premium library for an additional fee. If you can't find what you need, drop a line via e-mail to one of the sysops in the category you're interested in.

There is a catalog available through Q-Link which lists well over 35,000 files from the libraries. It is incomplete, not only because more files get uploaded every day, but also because some areas were inexplicably omitted. Still, it's a great resource—you can browse the libraries for hours without paying eight cents a minute to do so. □

—*SVA*

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FILE TYPES YOU'LL ENCOUNTER

You might have noticed that several of the filenames listed in the "Top Ten" had the letters "sda" attached to them. Suffixes such as this tell you, the downloader, what type of file it is and how you should handle it.

An "sda" file is a "self-dissolving archived" file. An archived file is made up of one or more files that have been compressed into a single, smaller file that is quicker to upload and download. Before an archived file can be used, it needs to be returned to its original, uncompressed format, with each file separated.

For instance, if a program consists of three files that work together, then they would all be archived (abbreviated "arced") as a single file. Then, after you have downloaded it, you need to "unarc" the file and separate it into its original three files.

Some of the three-letter designations indicate how you are to go about breaking the file up into its component files. Since an SDA is a "self-dissolving" archived file, when you load and run an SDA, it will automatically write itelf back into the uncompressed format and divide into the original files.

Other files have designations that tell you in which format the file was created, such as "mus," which tells you that the file is a music file that can be played with Stereoplayer and other SID music players.

What follows is a list of the most common file designations, and an explanation of each:

sda — As I said before, this type of file can be broken into separate files by loading and running it with the Basic command LOAD "filename",8:. You must be in the correct mode when dissolving these files—64 mode for 64 files and 128 mode for 128 files.

sfx — These are similar to sda files, except they can be dissolved in either 64 or 128 mode, regardless of the mode in which they were originally created.

arc — These files require a separate unarcing program, such as Omega-Q, probably the most comprehensive unarcing utility available through Q-Link.

lynx — Similar to archived files, these require a separate delynxing program to return them to their original, usable format.

mus — A SID music file, created with the SIDplayer Music System. Related designations give an idea of which types of support files are included, such as "msw" for a file with music, stereo and words files. The designation "sal" means the file is a SingALong, and includes lyrics. The "mus" files need no dissolving. The others dissolve themselves when you load and run them from Basic.

gif — This format for graphics files is something of a standard for images uploaded to bulletin boards. IBM boards often have large libraries of these. There are public domain viewers available for the Commodore, including an excellent one that transfers the image into geoPaint. □

—SVA

5. MENUMAKER by Bob Pellegrino (filename: "menu/64.sda" uploader: Xeno). One of the most basic parts of any program is the menu, the interface between you and the program. A well-designed menu makes any program look more professional, but getting them to do what you want with a minimum of fuss takes some time. If you want slick, user-friendly menus for your own programs, let this shareware utility automate the process.

6. SUPERMON+64 by Jim Butterfield (filename: "supermon+64" uploader: Butterfield). This classic machine language monitor program was written by one of the biggest names in Commodore programming; nobody is more qualified to design an ML monitor. If machine language is on your list of things to learn, you might want to search for one of the hard-to-find copies of his book *Machine Language For The Commodore 64, 128, and other Commodore Computers* to go with this program. You'll be LDA-ing and JSR-ing in no time.

7. INCREDIBOOT by Bob Pellegrino (filename: "incbootv7.sda" uploader: Xeno). It's no great trick to make your 128 autoboot a program from a disk. This utility, however, makes autobooting your chance to shine. You can customize the autoboot sequence with personalized messages, autoboot your C-128 into 64 mode, load and save customized boot screens and even relocate any data stored in the boot block of your disk to clear it for your autoboot code. Unfortunately, there is a drawback: Incrediboot will only work in 40-Column mode.

8. STAR FRONTIER by Seth Hopkinson (filename: "starfrontier.sda" uploader: "SethH15"). This addictive empire-building, space-fleet-battling game will keep you glued to your computer for hours. Seth is working on C-128 (80 columns) and Amiga versions of Star Frontier. For copies of the latest versions of the game and construction set, send $1 and a blank disk to Seth Hopkinson, 22511 W. Stator Lane, Saugus, CA 91350-1127. If you decide to keep the files, return $5 for each.

9. SCRAP GRAB by Michael Myers (filename: "scrapgrab" uploader: "geoLib PH"). With Scrap Grab, GEOS users can finally handle photo scraps intelligently. Being a desk accessory, this utility will reach out from anywhere and grab a scrap from a photo album on any actve drive, which means you can finally tuck all those oversized clip art photo albums away on a separate disk. And you'll never have to chop one up to fit on a geoPublish work disk again. The application version, Photo Grab, is identical except that it can handle larger scraps.

10. SPIRIT OF ART by Chad Glynn and Ernie Deakyne (filename: "soa complete.arc" uploader: "Cy TR0 ic"). Want to see what your computer can really do? Want to impress a skeptic with incredible animation and music pouring out of your "lowly" 64? Download this bit of computer magic and leave 'em wondering.

So, are these *really* my ten favorites? Well, this week . . . maybe. Of course, part of the fun is knowing that there's always something else out there, just around the corner. With all the great programs, it could take you a long time—maybe years—to exhaust the resources. But then, new ones are being added all the time. ■

Steve Vander Ark, one of RUN*'s newest regular writers, has a long history of Commodore computing. He spends much of his time scanning the networks for bargains he can add to his software library.*

PD AND SHAREWARE SOURCES

QuantumLink
8620 Westwood Center Drive
Vienna, VA 22180
(800) 827-8444

FOG International Computer Users' Group
PO Box 3474
Daly City, CA 94015
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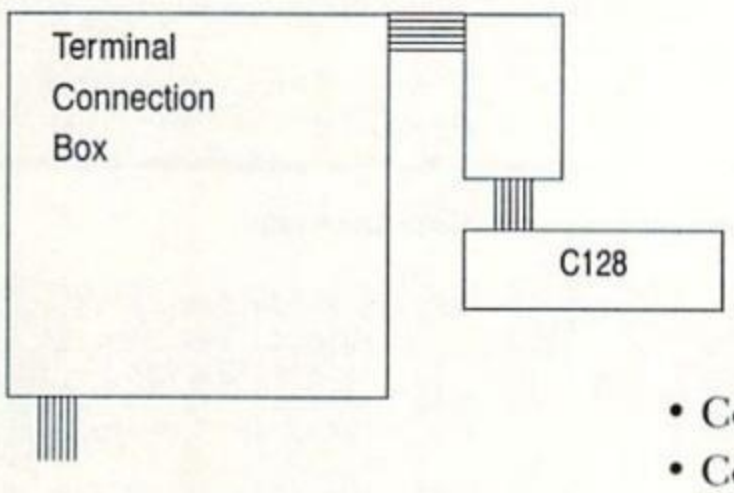

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Look and Load

By WAYNE MARTIN

Programmers love to stick pet machine language routines in the 4K of memory between $C000 (49152) and $CFFF (53247), so I wanted to find another, safer spot for a utility program I'd written. I'd never seen an ML program stored in RAM memory under the Kernal ROM, so I figured that would be a safe place.

When loaded, my program sits in the background waiting for the F7 key to be pressed. Then, it lists the disk directory and loads any program you choose, just by pressing F7 again. Because of its location, loading and running another program will not affect Look and Load.

Type in and save Listing 1 using the Checksum on page 45. Next, run the program; it will create and automatically save two machine language files on your disk, named KR Load and KR. Whenever you want to use Look and Load, type

```
LOAD"KR LOAD",8,1{RETURN}
SYS267{RETURN}
```

to load KR and reset the interrupt vector. If the interrupt vector is returned to normal (by pressing RUN-STOP/RESTORE or a reset button), SYS290 will direct it back.

During the interrupt period that occurs every 1/60 of a second, the computer checks to see if F7 was pressed. If so, then upon return from the interrupt routine it will jump to the ML routine located in RAM under the Kernal ROM. My routine clears the screen and prints the disk directory.

Press the space bar to slow the directory and any other key to stop it. To resume scrolling, press the space bar again. Use the CURSOR UP/DOWN key to move the highlighted area to the directory listing that you want to load. Press F7 again to load the program.

You can load any Basic or ML program. If you do not wish to load a program, press RETURN to clear the screen and return to Direct mode.

How It Works

Examine the program and you will see four sections of Data statements. The first copies the Basic and Kernal ROMs to their underlying RAM memory.

The second pokes the list and load program to an area in the newly copied Kernal RAM. The memory between $F8E2 (63714) and $FB96 (64406) is used only for tape operations, therefore I can poke my program in this area and still use the other Kernal routines.

Now comes the tricky part. In order to use the new Kernal RAM, the Kernal ROM must be turned off to force the computer to use the program in RAM memory.

This is done by changing the value in memory location #1 to 53. Upon completion of the program a 55 is stored there. The switching must be done in an area of memory that is not affected by other computer operations. There is an area between $010B (267) and $013E (318) that is only used during tape loading and cannot be overwritten by the stack, so the third set of Data statements pokes a short machine language routine into $010B that will do the required bank switching. It also holds the KR Load program.

The last set of Data statements takes all the above and saves the two programs, KR Load and KR, to your disk. KR is an entirely new Kernal RAM.

One warning: If you use a FastLoad cartridge, do not use the Monitor function as it changes the interrupt vector in RAM under Kernal ROM and thereby causes the program to hang up. R

Wayne Martin, a self-taught programmer, started programming the C-64 in 1986.

Listing 1. Look and Load Source program. Also available on the July/August ReRUN disk. Call 1-800-824-5499.

```
10 REM LOOK AND LOAD PROGRAM BY
    WAYNE MARTIN 1992  :REM*172
20 FOR X=49152 TO 49185:READ A:
   POKEX,A:NEXT        :REM*254
30 SYS49152            :REM*204
40 DATA 169,160,133,252,169,224
   ,133,254,169,0,133,251,133,2
   53,160,0,177        :REM*34
50 DATA 251,145,251,177,253,145
   ,253,136,208,245,230,252,230
   ,254,208,237        :REM*6
60 DATA 96             :REM*210
70 FOR X=63714 TO 64153:READ A:
   POKE X,A:NEXT       :REM*44
80 DATA 120,169,41,141,20,3,169
   ,1,141,21,3,88,76,57,1,186,1
   69,255,157,5,1      :REM*117
90 DATA 169,248,157,6,1,76,49,2
   34,120,32,21,253,88,32,231,2
   55,32,68,229,169    :REM*13
100 DATA 25,141,135,250,169,1,1
    41,153,250,133,204,169,166,
    141,130,250,169    :REM*213
110 DATA 164,72,169,115,72,169,
    1,162,8,160,0,32,186,255,16
    9,1,162,205,160    :REM*103
120 DATA 235,32,189,255,32,192,
    255,162,1,32,198,255,162,0,
    32,207,255,232     :REM*47
130 DATA 224,4,208,248,32,207,2
    55,201,66,240,88,201,18,208
    ,7,32,207,255      :REM*172
140 DATA 208,251,240,228,201,34
    ,208,234,32,234,232,173,135
    ,250,240,3,206     :REM*126
150 DATA 135,250,162,24,160,7,2
    4,32,240,255,169,34,32,22,2
    31,32,207,255      :REM*164
160 DATA 201,34,240,6,32,22,231
    ,24,144,243,32,22,231,32,20
    7,255,208,248,32   :REM*244
170 DATA 204,255,165,198,240,16
    7,173,8,221,41,16,141,8,221
    ,173,8,221,201,5   :REM*247
180 DATA 208,249,169,0,133,198,
    240,8,32,204,255,169,0,141,
    153,250,174,135    :REM*107
190 DATA 250,142,136,250,174,13
    6,250,160,7,24,32,240,255,1
    77,209,9,128,145   :REM*253
200 DATA 209,200,192,29,208,245
    ,32,228,255,201,13,240,67,2
    01,145,240,14      :REM*180
210 DATA 201,17,240,25,201,32,2
    40,36,201,136,240,81,208,23
    1,165,214,205      :REM*170
220 DATA 135,250,240,224,206,13
    6,250,32,30,250,240,196,169
    ,24,205,156,250    :REM*238
230 DATA 240,209,238,136,250,32
    ,30,250,240,181,173,150,250
    ,240,196,32,30     :REM*10
240 DATA 250,162,24,160,7,24,32
    ,240,255,76,54,249,32,204,2
    55,169,1,32,195    :REM*15
250 DATA 255,32,68,229,76,226,2
```


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Use RAM under Kernal ROM to list and load programs with a single keystroke.

```
    48,160,7,177,209,41,127,145
    ,209,200,192,29     :REM*254
260 DATA 208,245,96,240,226,32,
    30,250,162,0,160,8,177,209,
    201,34,240,23       :REM*124
270 DATA 201,32,144,6,201,64,17
    6,6,144,6,9,64,144,2,9,128,
    157,137,250,200     :REM*25
280 DATA 232,208,227,138,72,32,
    204,255,169,1,32,195,255,32
    ,68,229,104,162     :REM*171
290 DATA 137,160,250,32,189,255
    ,169,1,162,8,160,1,32,186,2
    55,169,0,32,213     :REM*21
300 DATA 255,144,5,169,119,141,
    130,250,104,104,169,225,72,
    169,166,72,76       :REM*70
310 DATA 226,248,24,0,32,70,73,
    76,69,32,78,65,77,69,32,65,
    82,69,65,32,1       :REM*172
320 FOR X=267 TO 319:READ A
                        :REM*208
330 POKEX,A:NEXT        :REM*79
340 DATA 169,2,162,62,160,1,32,
    189,255,169,1,162,8,160,1,3
    2,186,255,169,0     :REM*169
350 DATA 32,213,255,169,53,133,
    1,76,226,248,165,203,201,3,
    240,3,76,49,234     :REM*208
360 DATA 169,53,133,1,76,241,24
    8,169,55,133,1,96,75,82
                        :REM*18
370 FOR X=49186 TO 49302:READ A
    :POKEX,A:NEXT       :REM*230
380 OPEN15,8,15:INPUT#15,E,E$,T
    ,S:IFE=0THENSYS49186:INPUT#
    15,E,E$,T,S         :REM*225
390 PRINTE;E$;T;S:CLOSE15:END
                        :REM*70
400 DATA 32,128,192,169,7,162,1
    44,160,192,32,189,255,169,1
    1,133,253,169,1     :REM*64
410 DATA 133,254,162,64,160,1,1
    69,253,32,216,255,169,53,13
    3,1,32,128,192      :REM*48
420 DATA 169,6,162,138,160,192,
    32,189,255,32,192,255,162,1
    ,32,201,255,169     :REM*91
430 DATA 0,133,253,32,210,255,1
    69,224,133,254,32,210,255,1
    60,0,177,253,32     :REM*118
440 DATA 210,255,200,208,248,23
    0,254,208,244,169,1,32,195,
    255,32,204,255      :REM*176
450 DATA 169,55,133,1,96,169,1,
    162,8,160,1,32,186,255,96,7
    5,82,44,80,44,87    :REM*213
460 DATA 75,82,32,76,79,65,68
                        :REM*4
```

■

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Bowl 'n' Score

Here's a nifty little program that's right up your alley if you want to track and analyze your bowling statistics.

By RAFAEL DIAZ

I like to bowl, but let me dispell a few myths right off: My name's not Bud, I don't drive an El Camino, and I don't use personalized scorecards. Actually, stereotypes aside, bowlers are a progressive lot. All over America bowlers who own Commodores, like me, have been waiting for the right opportunity to join the computer revolution. And here it is: Bowling Scorekeeper 64!

This slick little program is menu driven and easy to use. It keeps track of your weekly game scores, the date, daily averages, overall average, and it calculates the average of your first, second, and third games throughout the season. It also records key statistics that will help you analyze your performance, including your highest game, your highest week, your total number of games over 200, and a summary of the entire season's scores.

Using the Program

Type in Bowling Scorekeeper 64 from Listing 1 using *RUN*'s checksum program on page 45. Save it to a formatted workdisk, and then run it.

When you run the program, you may choose to open a previously saved file, start a new file or display the disk directory. The first time you run the program, you will have to set up a new data file, so choose the second option. The program presumes that you bowl three games each night, one night a week.

I set up each season as a separate file, such as RAFAEL91–92. You can have many data files on a single disk, but I prefer to keep each bowler on a separate disk, to ensure accurate recording. Bowling Scorekeeper lets you view data from any file, so you can compare your scores from year to year.

Once you've set up the file, the main menu appears, offering the following options:

Set Up Screen Colors. This option lets you quickly change the screen colors using the function keys.

Add New Bowling Scores.This option lets you add scores to your data file on a weekly basis. After displaying which week number the games will be stored under, the program will ask you for the date. Enter the date as a six-digit number in "MMDDYY" format with no spaces. For example, August 7, 1992 would be entered as 080792.

The program will then ask you to enter the scores of the three games you bowled that week.

Print Season's Bowling Summary. This option displays statistics from all of the games you bowled during the season. The date, the score for each game, the pin total and average are displayed for each week of the season.

Print Bowling Statistics. This option displays the number of games bowled and not bowled, the number of games over 200, the highest game, the highest series, the total number of pins, the overall season average, and the averages of all your first games, second games and third games throughout the season.

This set of statistics is a potential gold mine. It can help you recognize trends in your bowling habits. For example, if you notice that your third game average is consistently lower than the others, it might indicate fatigue, or maybe that the lanes become dry, causing the ball to hook more. When you figure out the problem, you can figure out a solution and improve your performance.

Save Bowling Data. This option lets you write data to a specific file.

Bowling Scorekeeper will not only keep your records accurately and efficiently, it will give you the same kind of insight into your performance that the pros get. Who knows? Maybe this will shoot your team into the championship! R

Rafael Diaz is a software engineer at Motorola. He has been programming in Commodore Basic and assembly for several years.

Listing 1. Bowling Scorekeeper 64. Also available on the July/August ReRUN disk. To order, call 800-824-5499.

```
10 REM BOWLING SCOREKEEPER 64
                              :REM*42
20 DIM TG,WK,AV,P,Z,ZT,TW,W,T1,
   SV:R$=CHR$(18):H$=CHR$(19):C
   $=CHR$(44)                 :REM*76
30 F1$=CHR$(133):F3$=CHR$(134):
   F5$=CHR$(135):BD=53280:BC=53
   281:CHAR=646               :REM*187
40 O$=CHR$(146):DIM L,F1,F3,F5,
   FF$,X$,T,S,AD,AE,G1,G2,G3,X,
   Y                          :REM*64
50 MI=6:DIM D$(60),GM(60,3),GM$
   (60,3),DA(60),TP(60),MI$(MI)
                              :REM*56
60 FOR I=1 TO MI:READ MI$(I):NE
   XT:DEF FNRD(X1)=INT(X1*100+.
   5)/100                     :REM*101
70 GOSUB 1910:GOSUB 2010:REM*21
80 PRINT"{SHFT CLR}":PRINTTAB(1
   0)R$"BOWLING SCOREKEEPER"
                              :REM*253
90 SYSAD,5,5:PRINT"1. LOAD PREV
   IOUS DATA"                 :REM*50
100 SYSAD,5,6:PRINT"2. START FR
   OM SCRATCH"                :REM*172
110 SYSAD,5,7:PRINT"3. VIEW DIR
   ECTORY"                    :REM*179
120 GOSUB 1260:GET A$:IF VAL(A$
   )=1 THEN 160               :REM*202
130 IF VAL(A$)=2 THEN 150
                              :REM*99
140 GOSUB 1520:GOTO 80        :REM*81
150 GOSUB 1390:GOTO 180       :REM*99
160 GOSUB 1120                :REM*217
170 IF T1=1 THEN 80           :REM*18
180 PRINT"{SHFT CLR}":SYSAD,15,
```


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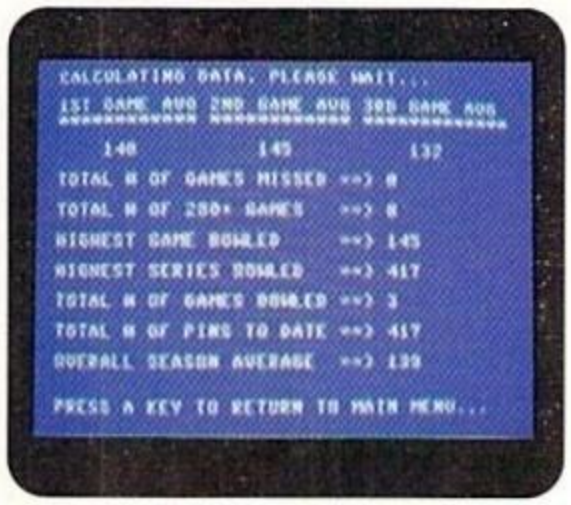
```
    5:PRINTR$"MAIN MENU"
                          :REM*11Ø
19Ø Y=1Ø:SYSAD,5,Y:FOR I=1 TO M
    I:PRINTMI$(I):Y=Y+1:SYSAD,5
    ,Y:NEXT               :REM*246
2ØØ GOSUB126Ø:GETA$:A=VAL(A$):I
    FA<=MITHENY=9+A:SYSAD,5,Y:P
    RINTR$;MI$(A):GOTO22Ø
                          :REM*195
21Ø GOTO 18Ø               :REM*38
22Ø SYSAD,2,21:PRINTR$"TYPE 'A'
     TO ABORT PRESENT SELECTION
     OR"                  :REM*15Ø
23Ø SYSAD,7,23:PRINTR$"HIT 'RET
    URN' TO EXECUTE...":GOSUB12
    6Ø                    :REM*25
24Ø GET A$:IF A$="A"THEN 18Ø
                          :REM*176
25Ø ON A GOSUB 174Ø,31Ø,58Ø,9ØØ
    ,7ØØ,27Ø              :REM*22
26Ø GOTO 18Ø              :REM*84
27Ø IF SV <> Ø THEN CLOSE15:END
                          :REM*92
28Ø PRINTR$"DATA NOT SAVED, OK
    TO QUIT? (Y/N)        :REM*89
29Ø GOSUB126Ø:GET A$:IF A$ = "N
    " THEN RETURN:        :REM*15
3ØØ CLOSE 15:END          :REM*51
31Ø PRINT"{SHFT CLR)":PRINTTAB(
    1Ø)R$"ADD BOWLING SCORES"
                          :REM*27
32Ø WK=WK+1:PRINT:PRINT"GAMES W
    ILL BE STORED UNDER WEEK #"
    ;R$WK                 :REM*12Ø
33Ø PRINT:PRINT"ENTER DATE GAME
    S WERE BOWLED ON (EXAMPLE Ø
    4Ø992 FOR APR 9, 1992
                          :REM*125
34Ø INPUT "==>";D$:IF LEN(D$)=6
     THEN D$(WK)=D$:GOTO 36Ø
                          :REM*19Ø
35Ø PRINTR$"INCORRECT DATE NOT
    ENOUGH DIGITS!PLEASE RE-ENT
    ER":GOTO 33Ø          :REM*44
36Ø PRINT:PRINT"THE DATE ENTERE
    D WAS ";R$;D$         :REM*13Ø
37Ø PRINT"IS THIS CORRECT? (Y/N
    )"                    :REM*187
38Ø GOSUB126Ø:GET A$:IF A$="N"
    THEN 33Ø               :REM*1
39Ø PRINT:PRINT"ENTER 3 GAMES B
    OWLED. ENTER Ø IF GAME{3 SP
    ACEs}WASN'T BOWLED."
                          :REM*164
4ØØ PRINT:PRINT:PRINT:Z=Ø
                          :REM*76
41Ø FOR I=1 TO 3          :REM*228
42Ø PRINT"GAME #{CRSR LF)"R$;I:
    INPUT"=>";G           :REM*178
43Ø PRINT"IS{CTRL 9}"G"{CTRL Ø}
    CORRECT? Y/N          :REM*79
44Ø GETA$                 :REM*68
45Ø IF A$="" THEN 44Ø     :REM*79
46Ø IF A$<>"Y" THEN 42Ø    :REM*4
47Ø GM(WK,I)=G:GM$(WK,I)=STR$(G
    )                     :REM*92
48Ø IF G=Ø THEN Z=Z+1:ZT=ZT+1:G
    M$(WK,I)=" ***":GOTO 5ØØ
                          :REM*161
49Ø TG=TG+1:IF G>199 THEN TW=TW
    +1                    :REM*169
5ØØ NEXT                  :REM*116
51Ø TP(WK)=GM(WK,1)+GM(WK,2)+GM
    (WK,3):IFZ=3THENDA(WK)=Ø:Z=
    1:GOTO54Ø             :REM*68
52Ø T1=FNRD(TP(WK)/(3-Z)):DA(WK
    )=T1:P=P+TP(WK)       :REM*235
53Ø IFTG<>ØTHEN AV=FNRD(P/TG)
                          :REM*247
54Ø PRINT:PRINT"HIT A KEY TO SE
    E THIS WEEK'S RESULTS...":G
    OSUB126Ø:PRINT"{SHFT CLR}"
                          :REM*1Ø5
55Ø B=Ø:W=WK:GOSUB61Ø     :REM*1Ø4
56Ø PRINT:PRINT"ENTER ANOTHER W
    EEK? Y/N":GOSUB 126Ø:GET A$
    :IF A$="Y"THEN 31Ø    :REM*142
57Ø RETURN                :REM*2Ø2
58Ø PRINT"{SHFT CLR}":SYSAD,1,1
    :PRINTTAB(5)R$"PRINT BOWLIN
    G SUMMRY":B=WK-1:B1=Ø
                          :REM*157
59Ø B2=Ø:W=1              :REM*83
6ØØ PRINT                 :REM*243
61Ø PRINTSPC(2)"DATE"SPC(6)"GAM
    ES"SPC(7)"PINS"SPC(3)"AVG":
    PRINT                 :REM*164
62Ø POKEAE+132,7          :REM*221
63Ø FOR I=W TO W+B        :REM*253
64Ø PRINTD$(I)TAB(8)GM$(I,1)TAB
    (12)GM$(I,2)TAB(16)GM$(I,3)
    TAB(23)TP(I);         :REM*132
65Ø PRINTTAB(26):SYSAE,DA(I)
                          :REM*196
66Ø B1=B1+1:IFB1=15THENB1=Ø:PRI
    NTR$"PRESS ANY KEY...":GOSU
    B126Ø:PRINT"{SHFT CLR}"
                          :REM*62
67Ø NEXT                  :REM*35
68Ø IF B=ØTHENRETURN      :REM*41
69Ø GOSUB1Ø7Ø:RETURN      :REM*48
7ØØ IF L=1 THEN 72Ø       :REM*42
71Ø PRINT"{SHFT CLR}":INPUT"FIL
    ENAME";F$:PRINT:GOTO75Ø
                          :REM*84
72Ø PRINT"{SHFT CLR}":PRINT"HIT
     'RETURN' IF USING THE SAME
     FILENAME"             :REM*3
73Ø PRINT"AS BEFORE, OTHERWISE
    TYPE IN THE NEW"      :REM*1Ø9
74Ø INPUT"FILENAME";F$    :REM*18
75Ø SYSAD,1,7:PRINT"SAVING DATA
     TO DISK UNDER:"      :REM*147
76Ø PRINTR$"'"F$"'..."    :REM*218
77Ø CLOSE15:OPEN 2,8,2,"@Ø:"+F$
    +",S,W"               :REM*49
78Ø GOSUB 86Ø:IF T1=1 THEN T1=Ø
    :RETURN               :REM*62
79Ø PRINT#2,TG;C$;WK;C$;ZT;C$;A
    V;C$;P                :REM*143
8ØØ FOR I=1 TO WK:PRINT#2,D$(I)
    ;C$;DA(I);C$;TP(I):NEXT
                          :REM*132
81Ø FOR I=1 TO WK         :REM*1Ø8
82Ø FOR J=1 TO 3:PRINT#2,GM(I,J
    ):NEXT:NEXT           :REM*169
83Ø CLOSE 2:SV=1          :REM*96
84Ø PRINT:PRINT:PRINT"DATA SAVE
    D TO DISK. HIT A KEY TO RET
```

Continued on p. 32.


CALCULATING DATA, PLEASE WAIT...
1ST GAME AVG 2ND GAME AVG 3RD GAME AVG
140 145 132
TOTAL # OF GAMES MISSED ==> 0
TOTAL # OF 200+ GAMES ==> 0
HIGHEST GAME BOWLED ==> 145
HIGHEST SERIES BOWLED ==> 417
TOTAL # OF GAMES BOWLED ==> 3
TOTAL # OF PINS TO DATE ==> 417
OVERALL SEASON AVERAGE ==> 139
PRESS A KEY TO RETURN TO MAIN MENU...

Bowling Scorekeeper 64 just might boost your team into the championship!

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GEOS 101

Prepare to become more productive! Part One of an introductory course for those who have never harnessed the power of the graphical interface.

By STEVE VANDER ARK

Seems like just about everyone has GEOS. Some bought it when it first came out. Others received a copy bundled with their C-64 or 1541. Everybody talks about GEOS, user's groups run GEOS tutorials, and the GEOS section is the largest area on QuantumLink. So if everyone *owns* it, and everyone *talks* about it, why doesn't everyone *use* it?

I can think of several good reasons. One fellow at our user's group meeting told me that he had no intention of loading a whole new operating system into his machine when there was a perfectly good one built right in. Another couple said they were intrigued by GEOS, but hadn't time to learn all of its ins and outs (like how to get their printer to work). One woman admitted she had spent hours trying to set everything up, but never could get GEOS to boot.

Even so, these same people gathered around my geoPublish demo, oohing and aahing over the ease with which I could import graphics into my desktop publishing work. But even after they had seen the system run, they couldn't believe that they can do the same. To these folks and many others GEOS is a mystery, fascinating but elusive.

It doesn't have to be this way; using GEOS is not difficult. It's a remarkable operating system and its applications are some of the most exciting and advanced in the Commodore world.

If you've always wanted to try GEOS, this series of articles will help you. In this segment, I'll discuss the basic concepts behind GEOS. Then I'll guide you through the first time, getting GEOS up and running for you. Finally, I'll give you a tour of the GEOS universe, stopping to look at its major applications.

GEOS vs. Commodore DOS

GEOS is an *operating system*, a set of routines that governs your computer's operation and its interaction with peripheral devices. As my friend in the user's group mentioned, there is an operating system already built into your computer. You use that operating system, called Commodore DOS, whenever you type one of those convoluted commands to format a disk or load a file.

GEOS provides a much more user-friendly way to get these jobs done. It's called a "graphical user interface," and is similar to the interface you find on Macintosh computers. With it, you give disk and file commands simply by clicking on menus with a pointer, not by typing in complicated commands.

"One fellow at our user's group meeting told me in no uncertain terms that he had no intention of loading a whole new operating system into his machine when there was already a perfectly good one built right in."

GEOS, however, is much more than an easier way to send the same old disk commands. When you boot GEOS, your computer is given a new set of rules in which the disk drive assumes a more active role in the system.

As with your computer's native operating system, in GEOS you load programs from a disk to start things off and save your work back to a disk when you're finished. Unlike Commodore DOS, however, GEOS can use a file in sections, loading into memory only those portions that are needed at a given time. This allows GEOS to actually handle data files larger than the available memory in the computer! The disk drive acts almost like extra memory.

Commodore DOS files can't be handled a little bit at a time. A standard file must be loaded all at once, because the Commodore operating system knows of no other way to do it. But GEOS files, called VLIR files, exist on your disk as a series of separate pieces. It is this unique file type that allows individual data files to exceed your Commodore's memory.

Because the native Commodore operating system doesn't recognize this file type, you'll see VLIR files identified in your directory as USR (user-defined) files. Accordingly, the VLIR structure is unrecognizable to Commodore DOS routines, so you can't use standard file copy programs with GEOS, nor can you use the Validate command on GEOS work disks.

Disk Drives and RAM Units

As mentioned above, some GEOS applications, surprisingly, are larger than the amount of memory your computer has in it. A prime example is geoPublish, which weighs in at 99K. It operates within the 64K by swapping in various sections of code as they are needed. You'll notice, for instance, that when you select some of the tools in geoPaint you have to wait for the drive to run before the tool is active. In this way, using VLIR files, your computer

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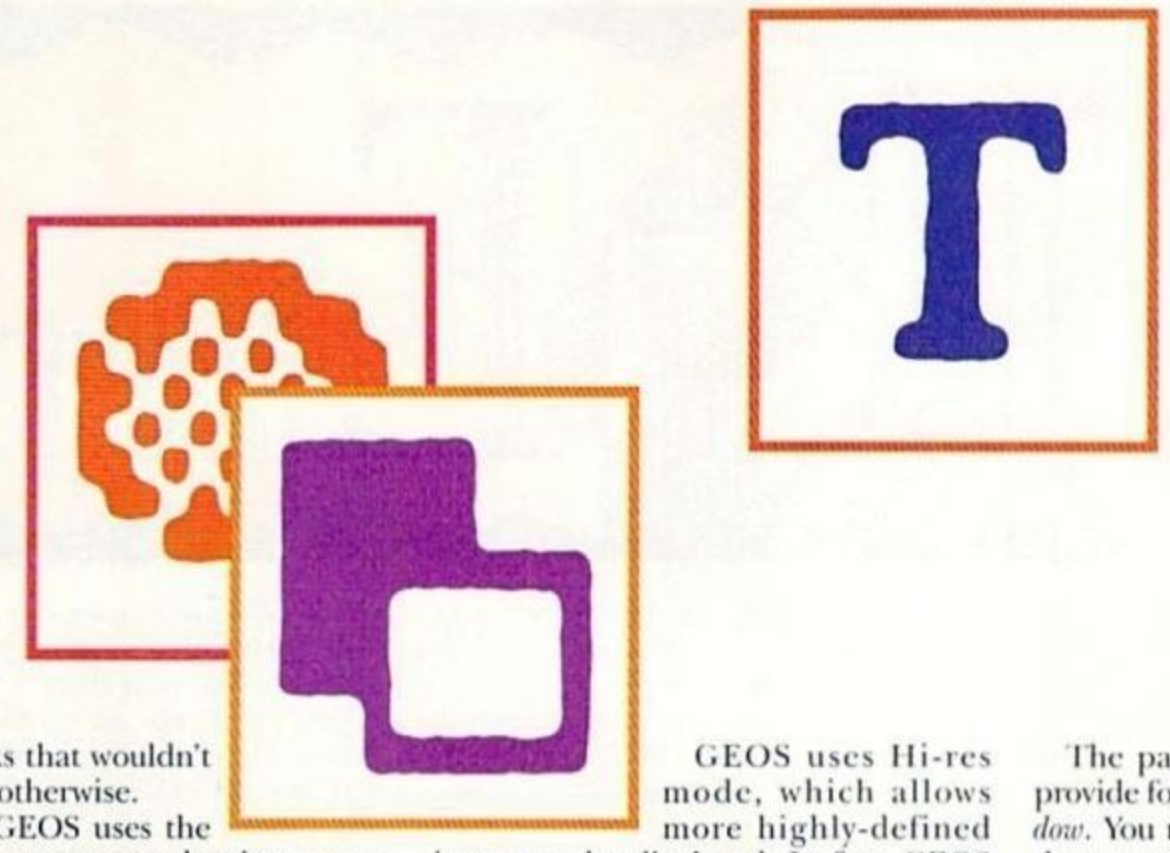


can do tricks that wouldn't be possible otherwise.

Because GEOS uses the disk drive as memory and active storage while you work, speed can be a problem. Every time the drive has to kick in, your computer slows to a crawl, waiting for data from the drive.

Within your computer, all of the data is retrieved electronically, with the signals traveling at nearly the speed of light. But because disk drives are mechanical, the signals are produced much more slowly while the disk spins and the drive head jumps back and forth looking for the correct block of data. GEOS enhances the drive's speed with sophisticated turbo code, but even that doesn't eliminate the delay, only shortens it.

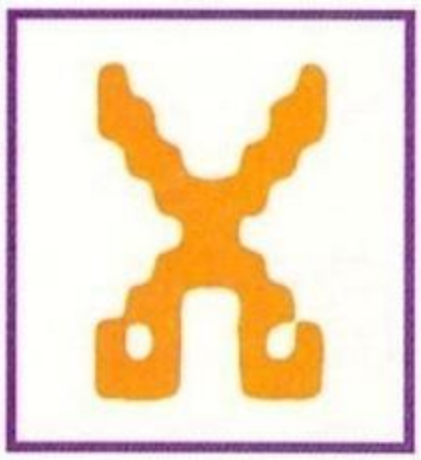
RAM devices, on the other hand, are not mechanical drives, so the data can be accessed almost as quickly as it can from the computer's own RAM. These devices, such as the Commodore REUs or the CMD RAMLink and RAMDrive, also help GEOS with other behind-the-scenes functions. It stands to reason, then, that loading your applications and data files into a RAM device will make GEOS run much more quickly and smoothly. In fact, the difference is astounding. Because of this, most GEOS users end up purchasing a RAM device of some kind.

Displaying GEOS

Commodore DOS uses several methods, called display modes, to display information on a monitor screen. The three main Commodore display modes are Text (low resolution), Multicolor (medium resolution), and Hi-res (high resolution).

Each mode has its strengths and weaknesses that software designers consider when choosing which is best for their projects. For example, Text mode is faster, but Multicolor mode can show more colors in a given area.

GEOS uses Hi-res mode, which allows more highly-defined images to be displayed. In fact, GEOS uses Hi-res mode for both graphics *and text*. Most programs that handle text use preprogrammed Text mode characters, but GEOS uses hi-res characters made up of patterns of dots, called bitmaps. This means that GEOS characters can be any shape or size, and can be combined with graphics wherever and however the user wishes. The computer has to plot each dot that makes up a character when it displays bitmapped text, so hi-res word processing is a little slow. It does, however, allow on-screen character formatting.



Many printers operate at the same resolution, measured in dots-per-inch (dpi), that GEOS displays on screen, so screen images translate faithfully to documents. Plus, most Commodore clip art is created in Hi-res mode (including Print Shop and Newsroom images), so they translate nicely into GEOS. In a way, Hi-res mode is something of a standard graphics format, so many images used by other computers, including the Macintosh, can also be converted to GEOS.

Windows and the Virtual Page

The first GEOS question I ever received from a reader was: "Why, when I print from geoWrite, does the printer always finish by advancing to the end of the page, even if a page full of text hasn't been typed?" The explanation points up another basic concept at work in GEOS: the *virtual page*. GEOS is always thinking of your document as an 8½ × 11-inch page of data. When you work on that document, the screen display you see is only one section of the whole page. Whether or not you fill it up, the rest of the page is there as far as GEOS is concerned.

The partial view GEOS applications provide for you to work in is called a *window*. You move that window around the document to work on it. In geoWrite 64, this means flipping from side to side across the page as you type along. In geoPaint it means using the scroll arrows to move across the image.

Only in geoPublish do you get the chance to work on a whole page at once, but even then a zoom window is available to let you see what you're doing in detail. In each of these cases, and throughout GEOS, everything you do happens on a "sheet of paper" in memory, a sheet that can be printed out dot-for-dot using just about any dot-matrix printer.

Next Up: GEOS 202

You're probably wondering how GEOS knows how to use "just about any dot-matrix printer," or how to get your copy of GEOS set up to understand your system, or how to avoid getting mangled by GEOS's formidable copy protection scheme. Now that we've looked at some of the concepts that govern GEOS, we can address the practical questions that will get you up and running. Next time, we'll set up GEOS step by step, from boot disks to printer drivers to work disks.

You may still have reservations about GEOS, but take heart, one or two more lessons, and you'll be zipping around the deskTop like a pro! ■

Steve Vander Ark has been writing about Commodores and GEOS for a number of years. He also wrote our feature article this time on shareware and PD software.

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Setting Up Your Equipment

• Always follow the directions found in your hardware's manual for setting up your equipment. Be sure all switches are set to "off" before plugging in power supply and interface cables. (For switches that read "0" and "1," "0" is off and "1" is on.)
• Hardware with moving parts sometimes has screws or other devices that keep parts immobile in shipping but that must be removed before attempting to operate the device.
• Prevent overheating. Allow plenty of air flow around the power supply and other individual components of your system. Remove dust covers from any unit that is powered up. Don't stack books or papers on top of your monitor's air vents.
• Position the power supply away from the monitor and avoid snaking cables in or around the power supply.
• If your power supply fails, select a new model with a replaceable fuse.
• When a power supply fails, it sometimes unleashes a surge of current into your computer. Use an in-line power supply surge suppressor (e.g., Computer Saver 2) to prevent damage from a "hot" power supply.
• Don't place your computer system near an open window; avoid direct sunlight, temperature fluctuations and weather elements (moisture, extremes of heat and cold).

Computer Hygiene

• Avoid exposure to grease, smoke and steam. (The kitchen is not a good place to operate your computer!)
• Don't eat, drink or smoke around your computer.
• Wash your hands if greasy or dirty.
• A product called "Safeskin" will protect your keyboard from spills, grease and dust while in operation. While not in use, dust covers will reduce the effects of environmental pollutants.
• Use a computer vacuum to clean your keyboard. Don't spray any kind of chemical cleanser or lubricant into your keyboard.
• Use a mild soap and water solution and *damp* (not wet!) rag or commercial computer cleaner on plastic surfaces. Unplug your system first!
• To avoid removing the protective coating, don't use window cleaner on your monitor screen.
• Clean your mouse by carefully removing the ball and wiping it with a mild soap and water solution or use a commercial mouse-cleaning kit. Brush dust out of the innards with a soft paintbrush.
• Use a mouse pad when you operate your mouse. This extends the life of your mouse by providing a clean operating surface and makes the mouse operations more efficient.
• Platen cleaner or alcohol will remove build-up of ink and other residues on your printer's platen.

Cable Care

• Label cables and sockets clearly. Attempting to plug your power supply into the serial port could spell disaster!
• Arrange cables where you can't trip over them. Tie up extra lengths of cable with cable ties, garbage bag twist ties or rubber bands. To prevent tripping on cables, use duct tape or commercially available cable ducting to cover any cable that crosses open expanses of the floor.

Disk Drive Dos And Don'ts

• Make sure labels and write-protect tabs are securely attached so they won't come loose inside your disk drive.
• Store disks in a clean, dry place to prevent introducing grease, grape jelly or diet soda into your drive.
• Don't close the latch of double-sided drives (1571) without a disk present.
• If you use an ultrasonic humidifier in your home, use distilled water in it to prevent mineral deposits on exposed surfaces in your computer system, such as on drive read-write heads.
• If you encounter loading errors, try unplugging your joystick and other extraneous peripherals which might be tying up your communications channels. Your power supply or monitor may be emitting stray signals which might interfere with the serial link. Try relocating your disk drive away from these potential sources of interference.

Printer Practices

• Don't advance paper by hand; use the line feed or form feed option.
• Don't move tractor-feed labels backwards. Tear or cut the strip behind the platen and advance them to eject. Spare labels can be used on disks, file folders, in the kitchen, etc.
• While printing, make sure paper is flowing freely and feeding without binding.

Habits To Make

• Press the keys gently—don't bang or allow young children to bang on them.
• To prevent condensation, don't put dust covers on while your system is warm.
• Plug your computer and peripherals into a power strip with a fuse. Turn off equipment when not in use for any length of time. Shut off the power strip (otherwise the AC-DC transformer in your power supply continues to work).
• Unplug electronics during electrical storms. Ditto for your modem surge suppressor. These devices are useful for con-

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Rules

Keep your system healthy and happy with these good sense guidelines of computer care.

By ELLEN RULE

trolling damage from normal power fluctuations but won't protect your equipment from lightning strikes.

• Learn as much as you can about your system from computer user groups, at the library, and of course from magazines like *RUN*. (Refer to articles such as "Rx for Healthy Computing," April '89, "101 Ways to Better Computing," May '90, and "Cliff Diver or Couch Potato?," Nov/Dec '91, for more great ideas on keeping your computer—and you—healthy!) A basic understanding of your equipment will not only assist you in preventive maintenance, but will also keep you from doing something really dumb!

• Keep your receipts and records of model numbers and serial numbers for warranty and insurance purposes.

• Promptly repair faulty equipment, loose cable connections, and so on to prevent further damage.

• Discharge static electricity prior to touching your equipment. You can use anti-static mats, "touch me first" strips, and/or an anti-static mat under your chair. (These are "generic" computer products, available from most computer dealers, office supply stores and mail order suppliers.)

• Don't plug in peripherals or cartridges while your system is on.

• Use a cartridge port expander to reduce wear and tear on cartridge port connections. Many types provide the added benefit of a reset switch. (Some brands are not recommended with REUs.) ■

Organizing Your Software

by Don Radler

In the years that I've been using my Commodore, I've amassed quite a collection of software: Literally thousands of files on hundreds of disks. When I think of the time and effort that I've invested in collecting, writing, and using all of this software, I wince to think that a slip of the coffee cup or a spritz of Endust could render them useless.

As the collection grew, it became obvious that some sort of organization was necessary, not just so that I could find the disks that I needed, but to ensure that each disk had a "home"—a place where it belonged, safely out of harm's way.

The method evolved over time, and I ended up using Ray Martin's shareware program Disk Catalog Manager/Reporter, a database that files your disks under a four-letter code rather than the usual two-letter ID. This allows for disk codes that are true mnemonics.

DCMR has a built-in rapid sort by disk name or by four-letter code, and unlimited editing access. With it, I use Avery's #5253 labels, which provide 3 lines, one each for Ray's four-letter code, the disk name, and any comments or notes, such as XFL for "Remove the FastLoad Cartridge."

I began by organizing my files into categories: Utilities, Databases, Terminal Programs, Art, Music and Games. On each disk, the first letter of the code indicates the category, U for utility, D for database, and so on. Then I used colored labels to make quick work of flipping through my disk boxes.

In the Utilities category, which I gave blue labels, a typical disk is UCOM (for computer), which houses the Abacus's Basic 64 and Blitz! Another, UEQUIP, holds 1541 Physical Exam, joystick and screen color testing programs.

UHSH (for household helpers) contains utilities such as Metric Converter from the 6/91 *RUN*. I separate the programming utilities by memory area, one disk has routines that occupy the much-used area starting at 49152 (UPRA), and a second with those that reside in other locations (UPRB). This separation is a timesaver when I'm reaching for a compatible routine in the middle of a programming session.

On UOLI, I keep the original listings of Basic programs that I've compiled, just in case I need them again. UTTL holds my title screens disk, 40 or so that are awaiting use in future programs. UUNF holds unfinished programs.

Next come the databases, led off by the DCMR, Ray Martin's disk catalog program, followed by DFIL, *RUN*'s DataFile. Finally, there's DSPR, which holds my favorite spreadsheet, accompanied by DSPD, containing the data files. Green labels mark the applications and yellow labels mark the data disks.

Then comes the Art category, starting with applications for multicolor work, graphics conversion, hi-res work, and the like. I also include clip art and my printer software. These disks are labeled in orange and have titles such as ADDL, for Doodle! and ANWS for Newsroom.

Under the Sound category, I have SFX1 and 2 (for sound effects), SIDD, which holds sound development programs, and others. As before, the music applications are in blue, and the data files in yellow.

Disks containing terminal programs, in green, have prefixes such as TQLK, for Q-Link's signature program.

Games, so many of which involve blowing up the world around you, are labeled in red, with disk codes such as GCRD for card games, GCHS for chess games, and GSPR for sports.

These are just a sample of the disks that I keep near my Commodore, ready to be used. Tucked away for infrequent use (or for permanent dead storage) are at least a thousand other programs. I have found that with a well-organized system I am more likely to use my software, and to keep it safely put out of harm's way. □

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Leap Frog

You'll be knee-deep, knee-deep, knee-deep in fun when you dive into this game of amphibian action.

By TONY BRANTNER

Meet Ribbit the frog. Unlike most frogs, Ribbit is a strict vegetarian. Still, the dragonflies at his pond are irresistable, and he enjoys swatting them from the air with his long tongue. Unfortunately for Ribbit, a neighborhood snake has acquired a taste for frog.

To play Leap Frog, be sure to have your joystick plugged into port two. The game begins with Ribbit making his way to the center of a log. Use the joystick to move Ribbit to the left or right. Flies descend from above and then move about the screen. Press the firebutton to send Ribbit's tongue darting out to swat the dragonflies from the air. But be sure to dodge each one as it drops, because if one hits him, he will think that the snake is after him and he'll hop off to safety.

The snake moves randomly back and forth, with his head bobbing above the log. To hop over the snake, push the joystick up-left or up-right. If you touch the snake, Ribbit will hop off the screen and you'll lose one frog. You begin the game with three frogs, and earn an extra frog for every 2000 points.

Clear all of the dragonflies from the screen and you will move to the next, faster level. Use the SHIFT-LOCK key to pause the game, and the RUN/STOP key to return to Basic.

Type in Leap Frog from Listing 1, using *RUN*'s Checksum on page 45 to catch any errors. Save the program as Leapfrog.SC. Next, run Leapfrog.SC once to create the file Leapfrog.ML. To play the game, load Leapfrog.ML with the command LOAD"LEAPFROG.ML",8,1 and then run it. Now, the next time you're looking for a challenge, don't just sit there like a bump on a log, get hopping with Leap Frog. R

Programmer Tony Brantner manages to keep us all jumping with his constant output of excellent C-64 action games.

Listing 1. Leapfrog.SC program. Also available on the July/August ReRUN disk. Call 1-800-824-5499.

```
Ø REM THIS LIST 1 CREATES (AND
  SHOULD NOT BE CALLED) LEAPFRO
  G.ML                    :REM*248
5 OPEN 8,8,8,"LEAPFROG.ML,P,W"
                          :REM*155
6 CT=Ø:PRINT"{SHFT CLR}":REM*56
1Ø READ A$:IF A$="-1" THEN CLOS
  E8:PRINT:PRINT"ALL DONE!":EN
  D                       :REM*129
12 PRINT"{HOME}READING LINE "+S
  TR$(CT):CT=CT+1         :REM*141
15 IF LEN(A$)<62 THEN 55
                          :REM*254
2Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
  2Ø)+MID$(A$,43,2Ø)      :REM*242
25 FOR I=1 TO 3Ø          :REM*181
3Ø C$=MID$(B$,(I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
                          :REM*2Ø9
35 H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55               :REM*85
4Ø L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55               :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);
                          :REM*67
5Ø NEXT:GOTO 1Ø           :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT
  O 7Ø                    :REM*184
6Ø IF LEN(A$)<42 THEN B$=LEFT$(
  A$,2Ø)+RIGHT$(A$,(LEN(A$)-21
  )):GOTO 7Ø              :REM*176
65 B$=LEFT$(A$,2Ø)+MID$(A$,22,2
  Ø)+RIGHT$(A$,LEN(A$)-42)
                          :REM*14Ø
7Ø FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$,(I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
                          :REM*14Ø
8Ø H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55               :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55               :REM*84
9Ø BY=H*16+L:PRINT#8,CHR$(BY);
                          :REM*148
95 NEXT:GOTO 1Ø           :REM*16Ø
1ØØ REM                   :REM*243
1Ø1 DATA Ø1Ø8ØB08ØAØØ9E323Ø36*3
  1ØØØØØØAØØØB9A61Ø99*ØØ3DB9A
  61199ØØ3EB9A6           :REM*88
1Ø2 DATA 1299ØØ3FC8DØEBA9ØØ8D*2
  ØDØ2Ø28ØEA9A4AØØE2Ø*1EABA21
  2AØØØ182ØFØFF           :REM*128
1Ø3 DATA A942AØØF2Ø1EABA9BØAØ*Ø
  F2Ø1EABA956AØ1Ø2Ø1E*ABA94Ø8
  D17DØA9ØØ8D1B           :REM*1Ø6
1Ø4 DATA DØ8D1DDØ8D26DØA9FF8D*1
  CDØA9ØD8D25DØA958D*2DDØ8D2
  EDØA5A24A4A4A           :REM*137
1Ø5 DATA 4A29Ø18D86Ø2A2Ø9AØØ7*1
  82ØFØFFA9A8AØØE2Ø1E*ABADØØD
  C291ØDØDFA2Ø9           :REM*83
1Ø6 DATA 2ØFFE9A2ØA2ØFFE9A2ØC*2
  ØFFE9A9Ø18DA6132Ø4E*ØDA9Ø32
  Ø59ØDADA6132Ø           :REM*216
1Ø7 DATA 66ØD8CC8Ø78DC9Ø7A9ØØ*A
  899A913C8DØFA2ØDCØD*A2ØAAØØ
  F182ØFØFFA924           :REM*11
1Ø8 DATA AØØF2Ø1EABA9BC8DAF13*A
  D1BD4293F8DB713A9Ø1*8DBF132
  ØF8ØBA2Ø62ØC5           :REM*17
1Ø9 DATA ØCA9B48DBØ13AD1BD429*Ø
  71869ØD8DA7132ØØ8ØE*A9FF8D1
  5DØA2ØØAØ41A9           :REM*227
11Ø DATA 172Ø2DØA2ØØ8ØEA2Ø82Ø*F
  FØDADB813C9ACDØE8A2*ØA2ØFFE
  9AD1EDØAD1FDØ           :REM*28
111 DATA 2ØE1FFDØØ1ØØAD8DØ2C9*Ø
  1FØF9E6Ø4EEF213ADF2*13C9119
  Ø2FA9ØØ8DF213           :REM*145
112 DATA A217ADF513FØ1BAØC8A9*1
  62Ø2DØAADF413DØ17AD*CØ13FØ1
  2ADB813C95A9Ø           :REM*171
113 DATA ØB4CØFØAAØ41ADØØDC2Ø*2
  DØA2ØE6ØC2ØCDØBEEF1*13ADF11
  3C92D9ØØDADA6           :REM*35
114 DATA 13ØA8DF1132ØF3ØB2ØØF*Ø
  C2ØØ8ØEADF513DØ2AAD*1ED01ØØ
  98DF5132ØB4ØD           :REM*7Ø
115 DATA 4CC2Ø9ADF313DØ17ADF4*1
  3DØ12ADA713DØØDAØØ5*B9A913D
  ØØ6881ØF84CC5           :REM*223
116 DATA Ø94C2BØ9A2ØAAØØC182Ø*F
  ØFFA93ØAØØF2Ø1EABA9*Ø485Ø5A
  218AØ41A91E2Ø           :REM*127
117 DATA 2DØA2ØØ8ØEA2Ø82ØFFØD*A
  DF413DØEAC6Ø5DØE6A2*ØA2ØFFE
```

RUN it right: **C-64; joystick in port 2**

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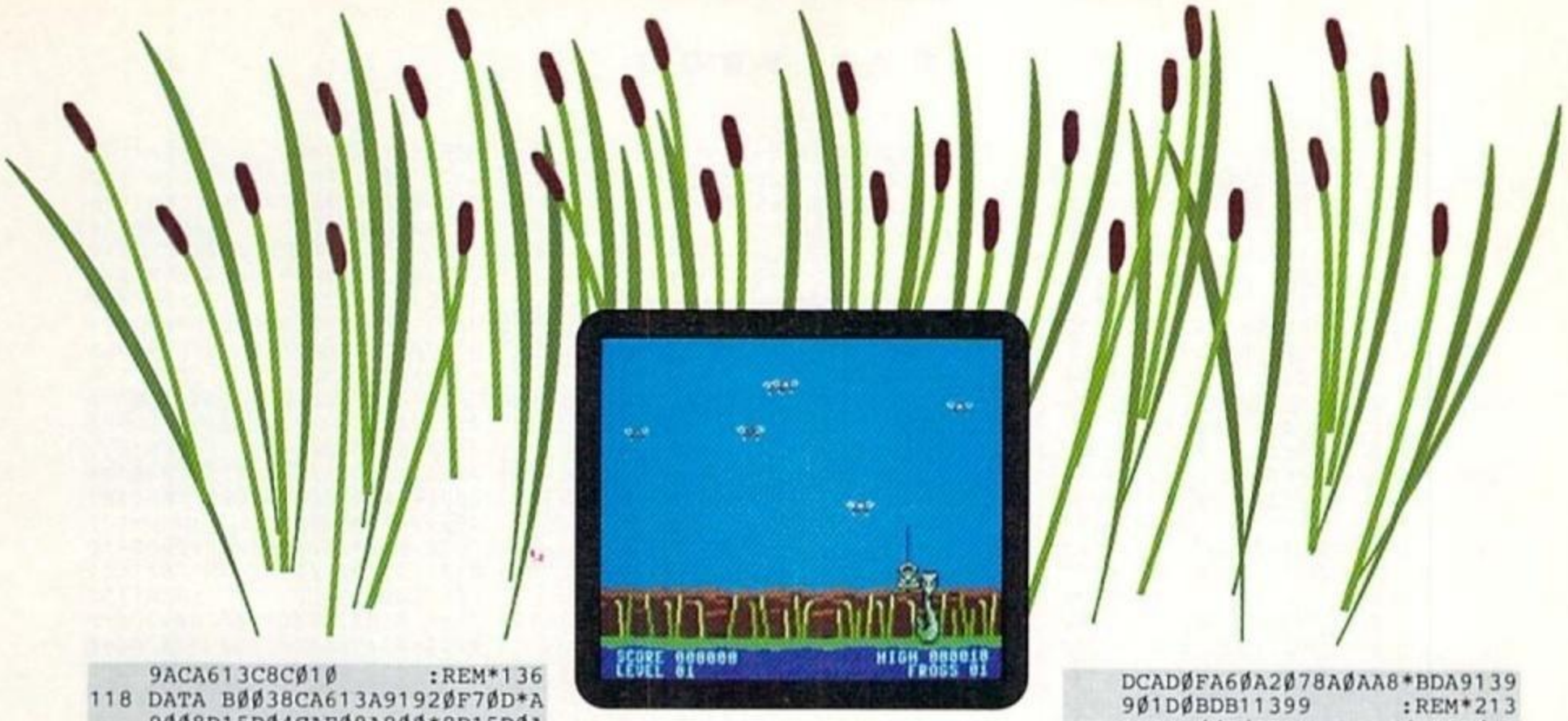

Ribbit the frog goes hunting flies.

```
    9ACA613C8CØ1Ø        :REM*136
118 DATA BØØ38CA613A9192ØF7ØD*A
    9ØØ8D15D04CAFØ8A9ØØ*8D15DØA
    CA81388984820        :REM*206
119 DATA 59ØD68FØØ34CBBØ8ADØØ*D
    C2910F0F94C72Ø8863A*843BACF
    313FØØ34CD1ØA        :REM*62
12Ø DATA ACF413FØØ34C32ØBAA29*1
    ØDØØ34C97ØA8A4ABØØ3*4C26ØB8
    A4A4A29Ø3A8B9        :REM*224
121 DATA 76ØEFØ36186DB813AAB9*7
    AØE6DCØ13DØØ7E43AFØ*254C73Ø
    AE43BFØ1E8EB8        :REM*1Ø8
122 DATA 138DCØ138A4A4A4A29Ø3*A
    88A29Ø7DØØ8B982ØEFØ*Ø32ØA2Ø
    DB97E0E2CA9F5        :REM*83
123 DATA 8DFFØ76ØA9F48DFFØ738*A
    DB813E915AA85Ø2ADCØ*13E9Ø04
    A66Ø246Ø246Ø2        :REM*214
124 DATA 18A9A965Ø285FBA9Ø669*Ø
    Ø85FC8A4A29Ø3A8B98C*ØE85Ø6A
    91185A7AØØ18C        :REM*97
125 DATA F313CØØ2BØ2F38A5FBE9*2
    885FB85FDA5FCE9ØØ85*FC29Ø3Ø
    9D885FEC6A7DØ        :REM*2Ø8
126 DATA Ø6EEF3134CØ4ØBAØØØA9*Ø
    291FDA5Ø691FB2Ø9CØD*4C8FØB1
    8A5FB692885FB        :REM*2Ø2
127 DATA A5FC69ØØ85FCE6A7AØØØ*A
    5A7C912BØØ7A92Ø91FB*4C9CØD8
    CF3136Ø8A4A4A        :REM*185
128 DATA 29Ø385392Ø74ØDAØØØ98*4
    A4AA838A9B4F99ØØE8D*BØ13A43
    918ADB8137976        :REM*218
129 DATA ØEAAADCØ13797AØEDØØ7*E
    43AFØØ74C64ØBE43BDØ*Ø898490
    385394C6AØB8E        :REM*146
13Ø DATA B8138DCØ13A2F538A9B4*E
    DBØ13C9Ø69ØØ6E8C9ØE*9ØØ1E88
    EFFØ7EEF413AD        :REM*146
131 DATA F413C9509ØØ5A9ØØ8DF4*1
    36ØAD1FDØ85Ø2A2ØØ46*Ø29Ø2DB
    DEB13DØ28BDA9        :REM*59
132 DATA 13C9329Ø21E9324A4A4A*3
    8E5A7C9Ø5BØ15AØØØA9*2Ø91FBE
    EF313FEEB132Ø        :REM*133
133 DATA 88ØDAEA6134CFEØCE8EØ*Ø
    69ØCA6ØA5Ø429Ø7DØ1F*A2Ø5BDA
    913FØ15BDEB13        :REM*215
134 DATA FØ1ØC9ØEBØØ9FEEB13DE*A
    9134CEFØBFEA913CA1Ø*E36ØA2Ø
    62Ø57ØCE63CA5        :REM*65
135 DATA 3C4A4A4AC9Ø69ØØ4A9ØØ*8
    53CA8B986ØE8DFEØ76Ø*A2Ø5BDA
    913DØØ62Ø9DØC        :REM*158
136 DATA 4C24ØCBDEB13DØØ32Ø28*Ø
    CCA1ØEA6ØFEC113BDC1*13DDC81
    39Ø24A9ØØ9DC1        :REM*59
137 DATA 13BDA913C933BØØ6FEA9*1
    34C57ØCBCCF13187977*ØEC932F
    Ø31C9B1FØ2D9D        :REM*18
138 DATA A913FED613BDD613DDDD*1
    39Ø3AA9ØØ9DD613BCE4*1318BDB
    1137977ØE85Ø2        :REM*62
139 DATA BDB913797BØED0Ø9A4Ø2*C
    Ø18BØØ94CC5ØCA4Ø2CØ*41BØF78
    5Ø3AD1BD4297F        :REM*81
14Ø DATA FØEE989DB113A5Ø39DB9*1
    36ØADA713FØ43CEA713*AD1BD42
    9Ø71869Ø19D27        :REM*164
141 DATA DØA91E9DA913AD1BD4Ø9*2
    Ø9DB113A9ØØ9DB9139D*EB13AD1
    BD429Ø39DC813        :REM*27
142 DATA AD1BD429Ø19DCF13AD1B*D
    429Ø39DDD13AD1BD429*Ø19DE41
    36ØA5Ø44A4A4A        :REM*89
143 DATA 4A29Ø1Ø9FEA2Ø5BCEB13*D
    ØØ39DF8Ø7CA1ØF56ØAD*A2Ø785Ø
    2AØØ438B9AØØ7        :REM*1Ø7
144 DATA 69ØØC93A9ØØ2A93Ø99AØ*Ø
    7881ØEFCADØE9ADA2Ø7*C5Ø2FØØ
    F4ABØØCACA813        :REM*2Ø5
145 DATA C8CØ64BØØ4982Ø59ØDAØ*Ø
    ØB9AØØ7D9B8Ø79Ø13DØ*Ø6C8CØØ
    69ØF16ØAØØ5B9        :REM*159
146 DATA AØØ799B8Ø7881ØF76ØAØ*Ø
    5A93Ø99AØØ7881ØFA6Ø*8DA8132
    Ø66ØD8CE4Ø78D        :REM*89
147 DATA E5Ø76ØAØ3ØC9ØA9ØØ5E9*Ø
    AC8DØF7Ø93Ø6ØA9Ø38D*Ø8D4A99
    58DØAD4A9Ø98D        :REM*2ØØ
148 DATA ØCD4A24Ø4C94ØDA9528D*Ø
    8D4A9Ø58DØCD4A28Ø8E*ØBD4E88
    EØBD46Ø38A913        :REM*111
149 DATA E5A7ØA8DØ1D4A9Ø28DØ5*D
    4A21Ø8EØ4D4E88EØ4D4*6Ø2ØDCØ
    DA9Ø68DØ3D4A9        :REM*125
15Ø DATA ØA8DØ5D4A9418DØ4D4AØ*2
    6A2ØØ188A69Ø8293FAA*8EØ1D4A
    9Ø22ØF7ØD881Ø        :REM*127
151 DATA EEAØ17A9ØØ99ØØD4881Ø*F
    A8CØED48CØFD4A98Ø8D*12D4A98
    F8D18D46Ø1865        :REM*2Ø7
152 DATA A2C5A2DØFC6ØAØØØC8DØ*F
    DCADØFA6ØA2Ø78AØAA8*BDA9139
    9Ø1DØBDB11399        :REM*213
153 DATA ØØDØBDB9134A26Ø2CA1Ø*E
    8A5Ø28D1ØDØ6Ø78A944*8D14Ø3A
    9ØE8D15Ø3A9ØØ        :REM*254
154 DATA 8D12DØA91B8D11DØA981*8
    D1ADØ586ØAD19DØ8D19*DØ3ØØ7A
    DØDDC584C31EA        :REM*65
155 DATA AD12DØAØØ2D96FØEBØØ3*8
    8DØF8B973ØE8D21DØB9*7ØØE8D1
    2Ø4CBCFEØØC8         :REM*16
156 DATA E5ØØØEØ9Ø6ØØØ1FFØØØØ*Ø
    ØFFØØF6F6F8F9Ø7ØØØ7*Ø5FBFAF
    BFCFDFC744748        :REM*16
157 DATA 67Ø4Ø7ØAØCØE1Ø111212*1
    31212111ØØEØCØAØ7Ø4*ØØØ88E9
    3ØØ122Ø922Ø2Ø        :REM*112
158 DATA 122ØC692BE122ØC692A1*1
    22ØC692A12Ø2Ø122ØC6*92BE122
    ØC692A1122Ø92        :REM*19Ø
159 DATA B7A1122Ø92B7BEØD2Ø2Ø*2
    Ø2Ø2Ø2Ø2Ø122Ø92A2BB*122Ø92A
    2BB122Ø922ØA1        :REM*176
16Ø DATA 122Ø922Ø2Ø2Ø2Ø122Ø92*2
    Ø2Ø122Ø92DF12DØ2Ø92*A2A1122
    Ø92A212ACØDØD        :REM*1Ø7
161 DATA 1D1D1D1D1D1D1D1D1D1D*1
    D1D5Ø524553531D4649*5245425
    554544F4EØØØ5        :REM*142
162 DATA 4745542Ø524541445921*Ø
    ØØ54C4556454C2Ø434F*4D504C4
    554454421ØØ81        :REM*7Ø
163 DATA A2B9A2A2B9B9A2B9A2B9*A
    2A2B9AFB9AFB9A2B9C6*B9AFB9A
    2D2AFB9A2D2AF        :REM*254
164 DATA AFD2B9B9C6A2B9A2B9AF*C
    6A399C91EC281B799D4*81A399C
    9C281C499C981        :REM*53
165 DATA B7C499D981A31EC999D4*8
    1A3C599C2D581C5B7C4*99C981A
    399C2C9C281C5        :REM*129
166 DATA 99C981B7C499C281C51E*D
    481A399C9C281B7ØØ2Ø*2Ø99C21
    EC781A31EC22Ø        :REM*9
167 DATA C299C72ØC281C5B71EC2*2
    ØC2C281A399C21EC899*C781C5B
    799C21EC8C799        :REM*8
168 DATA C71EC2C72Ø99C281B7C5*1
    EC7C2C2C7C299C72Ø9Ø*AFA499C
    81ED49ØA41ED9        :REM*37
169 DATA 9ØA41EC8D49ØA499C89Ø*A
    4AF1ED49ØA41EC8D99Ø*A499C81
    ED9D49ØA4AF1E        :REM*214
17Ø DATA C8D9D4D4C8D49ØA41EC8*9
    ØAFA41ED4C8D9D4C8D4*9ØA41E1 ►
```

RUN it right: **C-64; joystick in port 2**

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LEAP FROG

```
    2AFA4AFB9B9AF          :REM*210
171 DATA AFA4A4A4AFAFB9AFAFA4*A
    FA4AFAFB9AFA4AFB9B9*B9AFB9A
    FAFA4A4AFA4AF          :REM*168
172 DATA B9AFA4AF00922020200553*4
    34F52452030303030303*302020202
    020202020202020        :REM*77
173 DATA 202020204849474820300*3
    030303030D2020C45*56454C2
    030312020202020        :REM*154
174 DATA 20202020202020202020*2
    020202020246524F47*5320303
    00000000000000         :REM*77
175 DATA 000000000003C0000D700*0
    37DC00DFF700DFF700F*D7F00E6
    9B003AAC003D7          :REM*164
176 DATA C00DD77000D7D700F7DF0*3
    5EB5C36699C0EEBB03F*BEFCD6B
    E973FC3FC2600          :REM*174
177 DATA 000000000000000000000*0
    000C3000037DC003EBC0*0396C00
    E55B00FFFF003          :REM*58
178 DATA 55C003FFC00DD77000D7D*7
    00F7DF035EB5C36699C*0EEBB03
    FBEFCD6BE973F          :REM*199
179 DATA C3FC26000000000000000*C
    3000037DC003EBC00396*C00E55B
    00FFFF00355C0          :REM*14
180 DATA 00FF000355C00DD77000D*E
    B7003EBC00D697035EB*5C36FF9
    C0EBEB03FBEFC          :REM*123
181 DATA D6BE973FC3FC2600C300*0
    37DC003EBC00396C00E*55B00FF
    FF00355C000FF          :REM*226
182 DATA 000355C00DD77037EBDC*3
    CEB3C00EB000369C00D*7D7035C
    35C36C39C0EBE          :REM*45
183 DATA B03FBEFCD6BE973FC3FC*2
    600C3000037DC003EBC0*0396C00
    E55B00FFFF003          :REM*34
184 DATA 55C000FF000355C00DD7*7
    037EBDC3CEB3C03EB00*0D69C03
    5BD703AC35C0F          :REM*8
185 DATA B39C0EBEB035BEFC0FCE*9
    7000FC26000C300037D*C003EBC
    00396C00E55B0          :REM*13
186 DATA 0FFFF00355C000FF0003*5
    5C00DD7703 7EBDC3CEB*3C00EBC
    003697 00D7E5C         :REM*214
187 DATA 35C3AC36CEF00EBEB03F*B
    E5CD6B3F03FC000260 0*0000000
    0000 3FF000D55         :REM*222
188 DATA C00F57C00EDEC00E9AC0*0
    357C000DEC0003AC000*3AC000D
    B000036B000DAC         :REM*54
189 DATA 0C36AC37E5B0DBD66FEC*D
    5AAACE66AAC3956B00F*FFC0000
    3FF000D55C00F          :REM*254
190 DATA 57C00EDEC00E9AC00357*0
    000DF0000FB0000EB00*00DB000
    0DB000 35C000D         :REM*182
191 DATA 6C300DACDC39736C35BE*B
    0356FAC359AAC396AB0*0E5AC00
    3FF000000FFC0          :REM*21
192 DATA 03557003D5F003B7B003*A
    6B000D5C000F70000EF*0000EB0
    000E70000E700          :REM*146
193 DATA 0035C00C3970373A7039*C
    D6C0EBE5C3AF95C3AA6*5C0EA96
    C03A5B000FFC0          :REM*134
194 DATA 0000000000000000FFC0*0
    3557003D5F003B7B003*A6B003D
    5C003B7000 3AC         :REM*90
195 DATA 003AC0000E70000E9C0*3
    03A70DC3A9CE70E5B3B*F9973AA
    A573AA99B0E95          :REM*194
196 DATA 6C03FFF000000000000*0
    004001011 3C4410EB04*05EB500
    33CC003000C000         :REM*232
197 DATA C3001004000000000000*0
    000000000000000000*000000
    000000000000           :REM*137
198 DATA 000000000000000000004*0
    01011004411004404 7D*1001EB4
    000EB0003 3CC0         :REM*157
199 DATA 0300C000C3001004000*0
    000000000000000000*000000
    000000000000           :REM*62
200 DATA 000000000000000000000*0
    000000000000000000*000000
    000000000000           :REM*236
201 DATA 000000000000000000000*0
    000000000000000000*000000
    000000000000           :REM*239
202 DATA 000000000000000000000*0
    000000000000000000*000000
    000000000000           :REM*238
203 DATA 000000            :REM*88
204 DATA -1                :REM*62 ■
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COMMODORE CLINIC

This time, prescriptions for questions about disk drives, GEOS and PC keyboards.

By TIM WALSH

Q *I purchased a Commodore 1581 3½-inch disk drive and tried to use the 1581 Boot Disk Maker program found on* RUN's *GEOS Companion disk. All the program seems to do is format the disk in the 1581 and then lock up. Am I doing something wrong?*

Also, I can't get the shadow drive to appear on the GEOS deskTop. I didn't have the 1581 when I first began using GEOS and now I can't change the default settings. I have two 1581 disk drives.

—MARK NEWMAN
MIDDLEVILLE, MI

A You did not specify your system configuration, so I can only guess at the cause of your ailments. First, the 1581 Boot Disk Maker program will not work unless you have an REU (RAM expansion unit) connected to your computer. If you do not, the program behaves as you described—it formats the disk in the 1581 then "hangs up."

Your second question, concerning the shadow drive, brings to mind that the problem is with your version of GEOS, not your computer. GEOS versions 1.3 and earlier did not support the 1581. To access that drive, you need GEOS 2.0.

If you have GEOS 2.0, run the Configure 2.0 program to set up your 1581 drives, and you should be all set.

Q *I've continually upgraded my collection of Commodore hardware over the years. I now have a C-128D, a Magnavox monitor and a 1541-II disk drive. Is there any way to use a PC-compatible keyboard on my 128D? I'd like to use the type of keyboard with the clicking keys.*

—MITCH RILEY
SHELTON, NE

A I've never seen an adaptor that would let you use a PC-compatible keyboard with the C-128D. There is such an adaptor for Amiga computers, but not for 8-bit Commodores.

Q *I use GEOS 128 2.0 and would like to purchase geoPublish, but I get the impression that it only works with GEOS 64. Is this true?*

—GREGG ROBERTS
WINCHENDON, MA

A Unfortunately, yes. If you want to use geoPublish, you need GEOS 64. Because of its design, the program is not compatible with GEOS 128 2.0, even in 40-Column mode. There are no plans for a future release of geoPublish 128.

Q *I have a Commodore 128 and a Commodore 128D. Is it possible to connect the C-128 to the C-128D and use it as a RAM expansion unit?*

—EDOUARD BOULAY
QUEBEC, CANADA

A No, the C-128 cannot be connected to the C-128D and used as a RAM device. This really isn't an unusual request, though. Walk into *RUN*'s editorial offices and you'll see various other brand-name computers connected to one another with telephone lines. Setting up a network of computers requires specialized software, hard drives, connectors and lots of troubleshooting.

Although the technology is available for setting up networks of PCs and Macs, it simply isn't available for the Commodore.

Q *A friend of mine is a teenager who is blind. I enjoy making talking programs for him with the use of SAM, a speech program for the C-64. I would like to find other talking programs. I have called stores, questioned other users, and written letters, all to no avail. Do you have any suggestions for other "talking" software?*

—TIM RUPPERT
ALBANY, NY

A During the 1980s there were several popular voice synthesis software and hardware products for the C-64, such as Covox and Hearsay. Since then, most of these products have fallen by the wayside, companies have moved on to other computer platforms, and the products have become hard to find. And, if you do find one, technical support is nonexistent. User's groups still remain the best sources for hardware and software of this nature.

Last year, *RUN* sold the Covox VoiceMaster Jr. through our Special Products catalog. Due to the large demand for the item, however, our inventory was rapidly depleted and we can no longer obtain that product.

Q *I purchased two FSD-2 Excelerator Plus disk drives some time ago. After many hours of flawless operation, one of the FSD drives began to smoke. Then the second FSD drive's power supply began to smoke.*

I bought two Commodore 1541-II drives to replace the FSD drives and I noticed that the power supplies used by the 1541-II drives have the same pin configuration and voltages as the FSD drives. Is the FSD power supply compatible with the 1541-II? Do the Commodore drives share any parts with the FSD drives?

—THOMAS HOLLINGER
GREENVILLE, OH

A You're lucky to have noticed the disk drive burning before the fire spread! While the FSD-2 drives are reliable units, they do have a limited lifespan, as you discovered.

I recommend that you trash the FSD drives altogether. Trying to salvage the power supplies and other components from the FSD-2 drives is a sure-fire recipe for disaster (no pun intended).

I am a long-time FSD-2 drive user, and to the best of my knowledge, the Commodore 1541-II and the FSD-2 drives may have similar connectors and wiring, but the parts are not interchangeable. ■

Do you have a problem or question about your Commodore computer system, software or programming? Send your questions to Commodore Clinic, RUN *Magazine, 80 Elm St., Peterborough, NH 03458. Questions are answered only through this column, and, due to the volume of mail, only those likely to have broad appeal can be published.*

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BOWL 'N' SCORE

From p. 21.

```
    URN TO MAIN MENU..."
                          :REM*123
85Ø GOSUB126Ø:RETURN      :REM*214
86Ø CLOSE15:OPEN15,8,15:INPUT#1
    5,E,E$:IF E=Ø THEN T1=Ø:RET
    URN                   :REM*121
87Ø PRINT:PRINT"DISK ERROR #"R$
    ;E;O$"==› "R$;E$:PRINT
                          :REM*194
88Ø PRINT"CLEANING UP...":PRINT
    #15,"IO":T1=1:CLOSE15:CLOSE
    2                     :REM*227
89Ø GOSUB139Ø:RETURN      :REM*24
9ØØ PRINT"{SHFT CLR}":SYSAD,1,1
    :PRINTTAB(1Ø)R$"BOWLING STA
    TISTICS "             :REM*139
91Ø PRINT:PRINT:PRINTSPC(5)"1.
    PRINT TO SCREEN"      :REM*249
92Ø PRINTSPC(5)"2. BACK TO MAIN
     MENU"                :REM*252
93Ø INPUT A:IF A=2 THEN RETURN
                          :REM*144
94Ø PRINT:PRINT"CALCULATING DAT
    A. PLEASE WAIT...":GOSUB 12
    7Ø:PRINT              :REM*244
95Ø GOSUB 1Ø8Ø              :REM*2
96Ø PRINT"1ST GAME AVG 2ND GAME
     AVG 3RD GAME AVG"    :REM*65
97Ø PRINT"************ ********
    **** ************ ":REM*41
98Ø IF A=2 THEN PRINTTAB(3)G1TA
    B(8)G2TAB(8)G3:GOTO1ØØØ
                          :REM*1Ø5
99Ø PRINTTAB(3);G1;TAB(16);G2;T
    AB(29);G3             :REM*227
1ØØØ PRINT:PRINT"TOTAL # OF GAM
    ES MISSED ==›"ZT      :REM*238
1Ø1Ø PRINT:PRINT"TOTAL # OF 2ØØ
    + GAMES{3 SPACEs}==›"TW
                          :REM*233
1Ø2Ø PRINT:PRINT"HIGHEST GAME B
    OWLED{5 SPACEs}==›"HG
                          :REM*99
1Ø3Ø PRINT:PRINT"HIGHEST SERIES
     BOWLED{3 SPACEs}==›"HS
                          :REM*12Ø
1Ø4Ø PRINT:PRINT"TOTAL # OF GAM
    ES BOWLED ==›"TG      :REM*254
1Ø5Ø PRINT:PRINT"TOTAL # OF PIN
    S TO DATE ==›"P       :REM*41
1Ø6Ø PRINT:PRINT"OVERALL SEASON
     AVERAGE{2 SPACEs}==›"AV
                          :REM*14
1Ø7Ø PRINT:PRINT:PRINT"PRESS A
    KEY TO RETURN TO MAIN MENU
    ...":GOSUB126Ø:RETURN
                          :REM*91
1Ø8Ø G1=Ø:G2=Ø:G3=Ø        :REM*166
1Ø9Ø FOR I=1 TO WK:G1=G1+GM(I,1
    ):G2=G2+GM(I,2):G3=G3+GM(I
    ,3):NEXT              :REM*228
11ØØ G1=FNRD((G1/(WK-Z1))):G2=F
    NRD((G2/(WK-Z2))):G3=FNRD(
    (G3/(WK-Z3)))         :REM*4Ø
111Ø RETURN               :REM*224
112Ø F$="":PRINT"{SHFT CLR}":PR
    INT:INPUT"WHAT FILENAME";F
    $                     :REM*54
113Ø IF F$="" THEN T1=1:RETURN
                          :REM*52
114Ø SYSAD,1,6:PRINT"LOADING FI
    LE:"                  :REM*2Ø5
115Ø PRINTR$"'"F$"' PLEASE WAIT
    ..."                  :REM*235
116Ø OPEN 2,8,2,"@Ø:"+F$+",S,R"
                          :REM*121
117Ø GOSUB86Ø:IF T1=1 THEN RETU
    RN                    :REM*15
118Ø INPUT#2,TG,WK,ZT,AV,P
                          :REM*229
119Ø FOR I=1 TO WK:INPUT#2,D$(I
    ),DA(I),TP(I):NEXT:REM*1Ø7
12ØØ FOR I=1 TO WK        :REM*231
121Ø FOR J=1 TO 3:INPUT#2,GM(I,
    J):NEXT:NEXT          :REM*142
122Ø CLOSE 2              :REM*2Ø5
123Ø GOSUB146Ø            :REM*41
124Ø PRINT:PRINT"BOWLING DATA L
    OADED. HIT ANY KEY...":L=1
                          :REM*175
125Ø GOSUB126Ø:RETURN     :REM*96
126Ø POKE 198,Ø:WAIT 198,1:RETU
    RN                    :REM*221
127Ø ZT=Ø:TW=Ø:Z1=Ø:Z2=Ø:Z3=Ø:H
    G=Ø:HS=Ø              :REM*163
128Ø FOR I=1 TO WK        :REM*4Ø
129Ø FOR J=1 TO 3         :REM*82
13ØØ IF GM(I,J)<>Ø THEN 134Ø
                          :REM*2Ø4
131Ø ZT=ZT+1:IF J=1 THEN Z1=Z1+
    1                     :REM*59
132Ø IF J=2 THEN Z2=Z2+1:REM*14
133Ø IF J=3 THEN Z3=Z3+1
                          :REM*1Ø9
134Ø IF GM(I,J)›199 THEN TW=TW+
    1                     :REM*5
135Ø IF GM(I,J)›HGTHEN HG=GM(I,
    J)                    :REM*9
136Ø NEXT:NEXT            :REM*2Ø3
137Ø FOR I=1 TO WK:IF TP(I)›HS
    THEN HS=TP(I)         :REM*172
138Ø NEXT:RETURN          :REM*12
139Ø PRINT:PRINT:PRINTR$"HIT AN
    Y KEY...":GOSUB126Ø:RETURN
                          :REM*141
14ØØ DATA "1) SETUP SCREEN COLO
    RS"                   :REM*1Ø3
141Ø DATA "2) ADD NEW BOWLING S
    CORES"                :REM*41
142Ø DATA "3) DISPLAY SEASON'S
    BOWLING SUMMARY"      :REM*91
143Ø DATA "4) DISPLAY BOWLING S
    TATISTICS"            :REM*2Ø2
144Ø DATA "5) SAVE BOWLING DATA
    "                     :REM*8
145Ø DATA "6) QUIT"       :REM*51
146Ø FOR I=1 TO WK        :REM*252
147Ø FOR J=1TO3           :REM*29
148Ø GM$(I,J)=STR$(GM(I,J)):IF
    GM(I,J)=ØTHEN GM$(I,J)=" *
    **"                   :REM*13
149Ø NEXT J               :REM*238
15ØØ NEXT I               :REM*246
151Ø RETURN               :REM*114
152Ø PRINT"{SHFT CLR}":CLOSE15:
    OPEN15,8,15,"IO":OPEN2,8,2
    ,"#"                  :REM*86
153Ø T=18:S=1             :REM*141
154Ø PRINT#15,"B-R";2;Ø;T;S
                          :REM*171
155Ø PRINT#15,"B-P";2;Ø :REM*59
156Ø GET#2,X$:IFX$=""THENX$=CHR
    $(Ø)                  :REM*254
157Ø T=ASC(X$)            :REM*117
158Ø GET#2,X$:IFX$=""THENX$=CHR
    $(Ø)                  :REM*234
159Ø S=ASC(X$)            :REM*128
16ØØ FOR X=Ø TO 7         :REM*2Ø3
161Ø PRINT#15,"B-P";2;X*32+5
                          :REM*214
162Ø FF$=""               :REM*219
163Ø FOR Y=Ø TO 15        :REM*36
164Ø GET#2,X$:IFX$=""THENX$=CHR
    $(Ø)                  :REM*174
165Ø IF ASC(X$)=16ØTHEN168Ø
                          :REM*1Ø2
166Ø FF$=FF$+X$           :REM*72
167Ø NEXTY                :REM*189
168Ø IF A=ØTHENA=1:PRINTFF$;:GO
    TO17ØØ                :REM*32
169Ø A=Ø:PRINTTAB(2Ø);FF$
                          :REM*94
17ØØ NEXTX                :REM*2Ø9
171Ø IF T<>Ø THEN 154Ø    :REM*83
172Ø CLOSE1:CLOSE2        :REM*233
173Ø GOSUB 139Ø:RETURN    :REM*83
174Ø F1=Ø:F3=Ø:F5=Ø       :REM*8
175Ø PRINT"{SHFT CLR}":PRINT:PR
    INTTAB(5)R$"SCREEN COLOR D
    ISPLAY SETUP":PRINT:REM*59
176Ø PRINT:PRINT"F1 - SELECTS B
    ORDER COLOR"          :REM*32
177Ø PRINT"F3 - SELECTS BACKGRO
    UND COLOR"            :REM*138
178Ø PRINT"F5 - SELECTS CHARACT
    ER COLOR":PRINT       :REM*246
179Ø PRINT"ANY OTHER KEY EXITS
    TO MAIN MENU"         :REM*16
18ØØ PRINT:PRINTR$"SELECT YOUR
    COLORS..."            :REM*28
181Ø GOSUB126Ø:GET A$:IF A$<>F1
    $ AND A$<>F3$ AND A$<> F5$
     THEN RETURN          :REM*159
182Ø ON -(A$=F1$) GOSUB184Ø:ON
    -(A$=F3$) GOSUB186Ø:ON -(A
    $=F5$) GOSUB188Ø      :REM*244
183Ø GOTO 181Ø            :REM*1Ø3
184Ø F1=F1+1:IF F1›15 THEN F1=Ø
                          :REM*73
185Ø POKEBD,F1:RETURN     :REM*73
186Ø F3=F3+1:IF F3›15 THEN F3=Ø
                          :REM*19
187Ø POKEBC,F3:RETURN     :REM*1Ø6
188Ø F5=F5+1:IF F5›15 THEN F5=Ø
                          :REM*245
189Ø POKE CHAR,F5:SYSAD,Ø,17
                          :REM*2Ø3
19ØØ PRINT"YOUR CHARACTERS WILL
     LOOK LIKE THIS!":RETURN
                          :REM*1Ø
191Ø FOR AE=849 TO 984:READ DA:
    POKEAE,DA:NEXT        :REM*141
192Ø AE=849:RETURN        :REM*178
193Ø DATA 32,253,174,32,138,173
    ,32,221,189,32,1Ø2,3,32,3Ø
    ,171,169,13,32        :REM*167
194Ø DATA 21Ø,255,96,169,69,32,
    199,3,176,85,173,2,1,2Ø8,1
    1,172,213,3,169       :REM*31
195Ø DATA 48,153,2,1,136,2Ø8,25
    Ø,169,46,32,199,3,168,144,
    2,16Ø,48,169,Ø        :REM*197
196Ø DATA 32,199,3,152,157,Ø,1,
    169,46,32,199,3,172,214,3,
    232,136,2Ø8,252       :REM*44
197Ø DATA 236,213,3,176,33,172,
    213,3,169,Ø,153,1,1,189,Ø,
    1,2Ø1,32,2Ø8,3        :REM*114
198Ø DATA 173,216,3,153,Ø,1,2Ø2
    ,16,6,173,215,3,136,16,244
    ,136,16,231,169       :REM*168
199Ø DATA Ø,16Ø,1,96,162,Ø,221,
    Ø,1,24Ø,6,232,224,12,2Ø8,2
    46,24,96,9,2,32       :REM*13Ø
2ØØØ DATA 32              :REM*7Ø
2Ø1Ø FOR AD=828 TO 848:READ DA:
    POKEAD,DA:NEXT        :REM*64
2Ø2Ø AD=828:RETURN        :REM*224
2Ø3Ø DATA 32,253,174,32,158,183
    ,138,72,32,253,174,32,158,
    183,1Ø4,168,24        :REM*167
2Ø4Ø DATA 32,24Ø,255,96 :REM*16 ■
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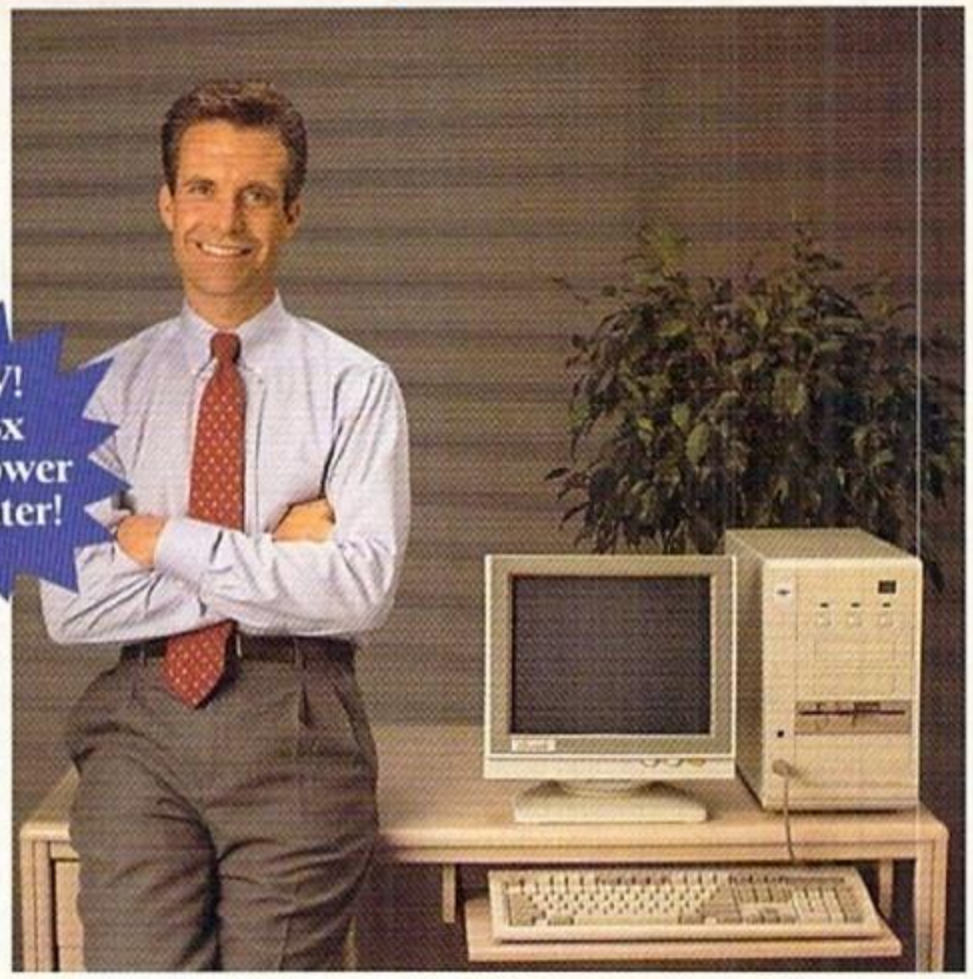

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128 Mode

Now you can rank sports teams just like the top analysts, with Roundball Roundup.

By MARK JORDAN

LAST SPRING I once again joined the legions of backyard heroes who filled out an NCAA basketball tournament bracket in hopes of picking the most winners. Like going one-on-one against Larry Bird, it's a formidable task: 64 teams are involved and one miss in the early rounds can cost you dearly.

I've tried various methods of making my picks, from intuition (forget that) to choosing the top-seeded teams (better) to consulting the last poll of the season (better still) to going hi-tech. Hi-tech in this case means reading *USA Today*'s computer rankings by MIT grad Danny Sagarin. In the last three years, his rankings have consistently beaten the others.

OK, so an MIT grad with a roomful of computers can rate teams better than coaches and sportswriters, but how about a small liberal arts college grad with a C-128? I wrote this program to find out. If you picked any team but Duke to win this year's NCAA championship, you need this program. Be sure to use the Checksum on page 45 as you type it in.

Roundball Roundup gives each team a power rating of .500 to begin the season. The ratings change as wins and losses accrue based upon team strengths, wins, point spreads and home-court advantages. I've found that even with this limited information, the program produces results comparable to Sagarin's.

You start by creating a league with up to 400 teams. Select Teams from the main menu to add teams. When you've finished, press the LEFT-ARROW key and RETURN.

Record each game's results by selecting the Scores option. Cursor through the team list and press RETURN to select the first team. Use the cursor keys to enter the score: CURSOR UP/DOWN changes the score by ten points, CURSOR LEFT/RIGHT by one. Press RETURN to enter the score. Repeat the procedure for the opposing team. Once you've entered both scores, select the home/away teams, again using the cursor keys and RETURN. You'll be given one final chance to edit. *Don't rush through this step!* Once installed, your results cannot be edited.

When you're finished entering scores, press ESCAPE to return to the main menu, and select Rank to calculate the team standings. (Unless you've typed in some scores, the program will have nothing to compare for ranking the teams.)

You can view, print or save your results any time. Save often. Your league list is always presented in alphabetical, rather than ranked, order. Each time you save, the previous results will be saved as a backup with the file extension .BAK. Also, you should always add the prefix RK. to your filenames. (The program prompts you to do so.) I'd recommend you experiment a bit before typing in three hours' worth of scores.

You can also use Roundball Roundup for baseball and football. You don't need a fancy degree, a roomful of technology, or even a pair of Air Jordans to predict this season's winners. All you need is Roundball Roundup. R

Mark Jordan (no relation to Michael) teaches high school English and can't wait until Indiana brings home another NCAA title.

Listing 1. Roundball Roundup program. Also available on the July/August ReRUN disk. Call 1-800-824-5499.

```
 Ø REM TEAM RANKINGS BY MARK JO
   RDAN                    :REM*219
2Ø GOSUB 244Ø              :REM*98
3Ø DO                       :REM*8
4Ø GOSUB 23ØØ              :REM*97
5Ø GETKEYA$:P=INSTR(KY$,A$):FL=
   P:IFP=ØTHENP=VAL(A$):REM*122
6Ø ON P GOSUB 11Ø,42Ø,147Ø,171Ø
   ,186Ø,195Ø,212Ø,227Ø,227Ø
                           :REM*118
7Ø IFP>7THENEXIT           :REM*6Ø
8Ø LOOP                    :REM*61
9Ø IFP=8THEN CLR:GOTO2Ø:REM*242
1ØØ END                   :REM*228
11Ø SCNCLR:WINDOWØ,Ø,23,23
                           :REM*115
12Ø PRINT"{CTRL 9}{COMD 7}{3 SP
    ACEs}{SHFT I}NPUT TEAMS{2 S
    PACEs}":PRINT"{CTRL 9} {LEF
    T ARROW} WHEN FINISHED"
                           :REM*2Ø1
13Ø TT=TZ+1:UU=Ø           :REM*227
14Ø DO                     :REM*118
15Ø PRINT"{HOME}{2 CRSR DNs}"E$
    "@"                    :REM*55
16Ø PRINT"{COMD 8}{SHFT T}EAM #
    "TT+1                  :REM*33
17Ø INPUT T$:IFT$=""THEN17Ø
                           :REM*2Ø7
18Ø IFT$="{LEFT ARROW}"THENEXIT
                           :REM*1Ø8
19Ø T$=LEFT$(T$,12)        :REM*13
2ØØ CHAR,Ø,7,LC$+"{CTRL 5}{SHFT
    I}S THIS CORRECT?{2 SPACEs
    }{SHFT Y}/{SHFT N}"    :REM*35
21Ø CHAR,Ø,6,"{UP ARROW}{2 SPAC
    Es}{UP ARROW}{2 SPACEs}{UP
    ARROW}"                :REM*243
22Ø CHAR,Ø,5,"{CTRL 2}"+T$,1
                           :REM*159
23Ø GETKEYA$:IFA$<>"Y"THEN15Ø
                           :REM*26
24Ø TM$(TT)=T$:PR(TT)=.5:TT=TT+
    1:UU=UU+1              :REM*32
25Ø WINDOW24,1,39,23      :REM*179
26Ø IFUU>2ØTHENUU=Ø:PRINT"{SHFT
    CLR}"                  :REM*84
27Ø CHAR,Ø,UU,"":PRINTTT"{CRSR
    LF}-"T$                :REM*87
28Ø WINDOWØ,Ø,23,23:PRINT
                           :REM*19Ø
29Ø LOOP                   :REM*12
3ØØ TZ=TT-1                :REM*155
31Ø GOSUB34Ø               :REM*134
32Ø PRINT"{2 HOMEs}{SHFT CLR}";
                           :REM*237
33Ø RETURN                 :REM*217
34Ø PRINT"{2 HOMEs}{3 CRSR DNs}
    {SHFT S}ORTING..."     :REM*117
35Ø FORK=ØTOTZ-1:HI=K:CHAR,1Ø,3
    ,STR$(K)               :REM*15
36Ø FORT=K+1TOTZ           :REM*133
37Ø IFTM$(HI)>TM$(T)THENHI=T
                           :REM*2Ø3
38Ø NEXT                   :REM*255
39Ø S$=TM$(K):TM$(K)=TM$(HI):TM
    $(HI)=S$               :REM*193
4ØØ NEXT                    :REM*16
41Ø RETURN                  :REM*42
42Ø IFTZ<1THEN19ØØ         :REM*45
43Ø PRINT"{2 HOMEs}{SHFT CLR}":
    TS=Ø:CU=Ø              :REM*6Ø
44Ø GOSUB139Ø:CHAR,24,1,"{CTRL
    2}"+STR$(TS+1)+"-"+TM$(TS),
    1                      :REM*225
45Ø DO                     :REM*175
46Ø PRINT"{2 HOMEs}{COMD 6}{CTR
    L 9} {SHFT C}URSOR, +/-, {S
    HFT R}ETURN{2 SPACEs}"
                           :REM*251
47Ø PRINT"{CTRL 9} {SHFT P}RESS
```


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Rank the teams with Roundball Roundup.

```
    {SHFT A} TO ADD TEAM{2 SPA
    CEs}"                   :REM*14
48Ø PRINT"{COMD 7}{CTRL 9} {SHF
    T E}SCAPE BACK TO MENU{2 SP
    ACEs}{COMD 8}"          :REM*143
49Ø GOSUB59Ø:IFA$=E$ORA$="A"THE
    NEXIT                   :REM*157
5ØØ IFA$="E"THEN49Ø         :REM*213
51Ø POKE2Ø8,Ø               :REM*99
52Ø GETKEYA$:IFA$=E$THENEXIT
                            :REM*189
53Ø POKE2Ø8,1:POKE842,ASC(A$)
                            :REM*35
54Ø WINDOWØ,4,23,24,1       :REM*2Ø2
55Ø PRINT"{2 HOMEs}"        :REM*54
56Ø LOOP                    :REM*31
57Ø IFA$="A"THEN11Ø         :REM*144
58Ø RETURN                  :REM*2Ø8
59Ø CHAR,Ø,4,"{SHFT S}CORE"
                            :REM*89
6ØØ TP=Ø:SC=Ø               :REM*89
61Ø FORT=ØTO1:T1=T+1        :REM*138
62Ø CHAR,6,T1*5,"{COMD 7}{SHFT
    T}EAM:"                 :REM*2Ø4
63Ø DO                      :REM*98
64Ø GETKEY A$:IFA$=CHR$(13)ORA$
    =E$THENEXIT             :REM*177
65Ø CZ=CU                   :REM*68
66Ø IFA$="{CRSR DN}"THENIFCU+TS
    <TZTHENCU=CU+1          :REM*68
67Ø IFA$="{CRSR UP}"THENCU=CU-1
    :IFCU<ØANDTS=ØTHENCU=Ø
                            :REM*13
68Ø IFA$="+"THENCU=Ø:GOSUB133Ø
                            :REM*253
69Ø IFA$="-"THENCU=Ø:GOSUB134Ø
                            :REM*218
7ØØ IFA$="A"THENEXIT        :REM*191
71Ø IFCU>22THENGOSUB133Ø
                            :REM*251
72Ø IFCU<ØTHENCU=22:GOSUB134Ø
                            :REM*1Ø6
73Ø CHAR,24,1+CZ,"{CTRL 8}"+STR
    $(CZ+TS+1)+"-"+TM$(CZ+TS),Ø
                            :REM*131
74Ø CHAR,24,1+CU,"{CTRL 2}"+STR
    $(CU+TS+1)+"-"+TM$(CU+TS),1
                            :REM*1Ø6
75Ø CZ=CU                   :REM*184
76Ø LOOP:IFA$=E$ORA$="A" THENRE
    TURN                    :REM*158
77Ø B=TS+CU:TM(T)=B         :REM*111
78Ø CHAR,12,T1*5,"{CTRL 4}"+TM$
    (B)+" ":PRINT           :REM*178
79Ø S=B:YY=T*5+6:GOSUB127Ø
                            :REM*85
8ØØ PRINT"{2 HOMEs}{CTRL 9}{CTR
    L 4}{4 SPACEs}{SHFT U}SE CU
    RSOR KEYS{3 SPACEs)"
                            :REM*243
81Ø PRINT"{CTRL 9}{5 SPACEs}TO
    SET SCORE{5 SPACEs}"
                            :REM*138
82Ø SC=-1Ø:POKE2Ø8,1:POKE842,17
                            :REM*22Ø
83Ø DO                      :REM*45
84Ø GETKEY A$:IF A$=CHR$(13)OR
    A$=E$THENEXIT           :REM*2Ø6
85Ø IF A$="{CRSR DN}"THENAD=1Ø
                            :REM*6Ø
86Ø IF A$="{CRSR RT}"THENAD=1
                            :REM*227
87Ø IF A$="{CRSR UP}"THENAD=-1Ø
                            :REM*19Ø
88Ø IF A$="{CRSR LF}"THENAD=-1
                            :REM*11Ø
89Ø SC=SC+AD:IFSC<ØTHENSC=Ø
                            :REM*5
9ØØ SC$=STR$(SC)            :REM*49
91Ø CHAR,Ø,T1*5,"{CTRL 2}{4 SPA
    CEs}":CHAR,Ø,T1*5,SC$
                            :REM*152
92Ø LOOP:IF A$=E$THENRETURN
                            :REM*241
93Ø T(T)=SC:TP=TP+SC:SC=Ø
                            :REM*22Ø
94Ø NEXT                    :REM*42
95Ø PRINT"{2 HOMEs}{CTRL 9}{COM
    D 8}{3 SPACEs}{SHFT W}HICH
    TEAM HOME?{3 SPACEs}"
                            :REM*96
96Ø PRINT"{CTRL 9} ({SHFT U}SE
    CURSOR/{SHFT R}ETURN){2 SPA
    CEs}"                   :REM*2
97Ø R=1:POKE2Ø8,1:POKE842,65
                            :REM*2Ø5
98Ø DO:GETKEYA$:IFA$=CHR$(13)OR
    A$=E$THENEXIT           :REM*67
99Ø IFR=ØTHENR=1:R1=6:R2=11:ELS
    E R=Ø:R1=11:R2=6        :REM*195
1ØØØ CHAR,Ø,R2,"{CTRL 2}{SHFT H
    }OME",1                 :REM*76
1Ø1Ø CHAR,Ø,R1,"{CTRL 3}{SHFT A
    }WAY",1                 :REM*228
1Ø2Ø LOOP:IFA$=E$THENRETURN
                            :REM*84
1Ø3Ø CHAR,3,3,"{CTRL 2}{SHFT P}
    RESS {SHFT E} TO EDIT"
                            :REM*89
1Ø4Ø GETKEYA$               :REM*241
1Ø5Ø CHAR,3,3,"{15 SPACEs}"
                            :REM*15Ø
1Ø6Ø IFA$="E"THENWINDOWØ,4,24,2
    4,1:PRINT"{2 HOMEs}":RETUR
    N                       :REM*247
1Ø7Ø IN=1                   :REM*234
1Ø8Ø H=TP*.1:HH=-1          :REM*17
1Ø9Ø IFR THENHH=1           :REM*126
11ØØ X=TM(Ø):Y=TM(1):TX=Ø
                            :REM*15Ø
111Ø IFT(1)>T(Ø)THEN X=TM(1):Y=
    TM(Ø):TX=1              :REM*236
112Ø TW(X)=TW(X)+1:TL(Y)=TL(Y)+
    1                       :REM*18Ø
113Ø TC(X)=TW(X)+TL(X)      :REM*155
114Ø TC(Y)=TW(Y)+TL(Y)      :REM*227
115Ø PD=T(TX)/TP            :REM*226
116Ø CP=PR(X)+PR(Y)         :REM*26
117Ø SB=CP*PD               :REM*97
118Ø HA=((SB-(CP/2))*.2)*HH
                            :REM*244
119Ø WT=SB+HA               :REM*95
12ØØ LT=CP-WT               :REM*74
121Ø TT(X)=TT(X)+WT         :REM*32
122Ø TT(Y)=TT(Y)+LT         :REM*186
123Ø PR(X)=TT(X)/TC(X)      :REM*135
124Ø PR(Y)=TT(Y)/TC(Y)      :REM*239
125Ø FORK=ØTO1:S=TM(K):YY=K*5+6
    :GOSUB127Ø:NEXT         :REM*1Ø4
126Ø RETURN                 :REM*127
127Ø CHAR,Ø,YY,"":FORRR=ØTOTZ:I
    FRA(RR)=S THEN129Ø:REM*183
128Ø NEXT                   :REM*135
129Ø PRINT"{COMD 8}{8 SPACEs}"D
    A$(Ø)":";TW(S)"-"TL(S)
                            :REM*129
13ØØ PRINT"{COMD 8}{8 SPACEs}"D ►
```

The Game Plan: How Roundball Roundup Works

WHEN YOU INPUT a contest score, the computer adds the power rating of each participant. The first time teams play, this will add up to 1.000, since every team starts with a .500 rating. But from this point on, the results will differ. This value is the Contest Power (CP).

The Point Differential (PD) is calculated by dividing the winner's score by the total. Next, the program calculates a subtotal (ST) by multiplying the contest power by the point differential.

The home/away factor (HA) is calculated using a fairly complicated formula (line 1180 of Listing 1). Suffice it to say that it reduces the value of a home-court win, but never to the point that the losing team gets more than the winning team. (See lines 1150–1200.)

For example, suppose Indiana University, with a power rating of .675, plays Duke, which has a power rating of .735. Indiana wins at home, 81–76. The calculations would be:

CP=.675+.735=1.41

PD=81/157=.515

ST=1.41 x .515=.726

HA=.0042

ST–HA=.726–.0042=.721

IU gets this much (.721) for its win, and Duke picks up what's left over from the original contest power:

1.41–.721=.689

As you can see, Duke didn't lose too much ground in the process, because they played on the opponent's home court and kept the score close.

—*MJ*

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128 MODE

```
    A$(1)":";RR+1      :REM*113
131Ø PRINT"{COMD 8}{8 SPACEs}"D
    A$(2)":";:PRINTUSING".###"
    ;PR(S)             :REM*14
132Ø RETURN            :REM*179
133Ø TS=TS+23:CU=Ø:GOTO137Ø
                       :REM*112
134Ø TS=TS-23          :REM*33
135Ø IFCU+TS=>TZTHENCU=TZ-TS+1
                       :REM*127
136Ø IFTS<ØTHENTS=Ø    :REM*52
137Ø IFTS>TZTHENTS=TZ-22:CU=22
                       :REM*212
138Ø CZ=CU             :REM*45
139Ø WINDOW24,Ø,39,24,1 :REM*29
14ØØ PRINT"{CTRL 9}{CTRL 8}{5 S
    PACEs}{SHFT T}EAMS{6 SPACE
    s}"                :REM*63
141Ø FORK=ØTO22         :REM*34
142Ø PRINT K+1+TS"{CRSR LF}-"TM
    $(K+TS)            :REM*7
143Ø NEXT              :REM*3Ø
144Ø IFTZ=>TS+23 THENPRINT" {CT
    RL 2}{CTRL 9}----{SHFT M}O
    RE----"            :REM*239
145Ø PRINT"{2 HOMEs}"  :REM*177
146Ø RETURN            :REM*68
147Ø P=4:IFSO=ØTHEN171Ø:REM*125
148Ø OPENP,P,7:SC=Ø    :REM*1ØØ
149Ø PRINT#P,,"{7 SPACEs}{SHFT
    C}-128 {SHFT R}ANKINGS"
                       :REM*27
15ØØ PRINT#P,"{2 SPACEs}{SHFT T
    }EAM{13 SPACEs}{SHFT W}{3
    SPACEs}{SHFT L}{5 SPACEs}{
    SHFT P}TS{4 SPACEs}{SHFT P
    }WR%"              :REM*184
151Ø FORT=ØTOTZ:SC=SC+1:REM*2Ø7
152Ø IFFL>3 AND SC=21 THEN GOSU
    B167Ø:IFA$=E$THEN155Ø
                       :REM*22Ø
153Ø GOSUB157Ø         :REM*93
154Ø NEXT              :REM*128
155Ø CLOSEP            :REM*73
156Ø RETURN            :REM*16Ø
157Ø S=RA(T)           :REM*191
158Ø A$=LEFT$(TM$(S)+"{12 SPACE
    s}",13)            :REM*29
159Ø R$=RIGHT$("{2 SPACEs}"+STR
    $(T+1),3)          :REM*18
16ØØ PRINT#P,R$"-"A$;  :REM*9Ø
161Ø PRINT#P,USING"###";TW(S);
                       :REM*115
162Ø PRINT#P,USING"####";TL(S);
    :PRINT#P,"{3 SPACEs}";
                       :REM*154
163Ø PRINT#P,USING"###.##";TT(S
    );:PRINT#P,"{3 SPACEs}";
                       :REM*252
164Ø PRINT#P,USING".###";PR(RA(
    T));               :REM*17Ø
165Ø PRINT#P,          :REM*38
166Ø RETURN            :REM*13
167Ø CHAR,Ø,24,"{SHFT P}RESS AN
    Y KEY TO CONTINUE" :REM*87
168Ø GETKEYA$          :REM*124
169Ø PRINT"{HOME}{2 CRSR DNs}"E
    $"@";              :REM*16
17ØØ SC=Ø:RETURN       :REM*199
171Ø PRINT"{SHFT CLR}":IFTZ<1 O
    R IN=Ø THEN19ØØ    :REM*82
172Ø SO=1:CHAR,14,Ø,"{CTRL 2}{S
    HFT R}ANKING TEAM #":REM*1
173Ø FORT=ØTOTZ         :REM*113
174Ø RR(T)=PR(T):RANK(T)=T
                       :REM*13Ø
175Ø NEXT              :REM*95
176Ø FORK=ØTOTZ:HI=K:CHAR,28,Ø,
    STR$(K+1)          :REM*223
177Ø FORT=K+1TOTZ       :REM*9
178Ø IF RR(HI)<RR(T) THEN HI=T
                       :REM*64
179Ø NEXT              :REM*135
18ØØ S=RR(K):RR(K)=RR(HI):RR(HI
    )=S                :REM*23Ø
181Ø S=RA(K):RA(K)=RA(HI):RA(HI
    )=S                :REM*119
182Ø NEXT              :REM*153
183Ø P=3:PRINT:GOSUB148Ø:REM*49
184Ø GOSUB192Ø         :REM*136
185Ø RETURN            :REM*2Ø7
186Ø PRINT"{SHFT CLR}{CTRL 2}":
    IFSO=ØTHEN171Ø     :REM*1Ø3
187Ø P=3:GOSUB148Ø      :REM*85
188Ø GOSUB192Ø         :REM*16Ø
189Ø RETURN            :REM*247
19ØØ PRINT"{2 HOMEs}{SHFT CLR}{
    CTRL 2}{SHFT N}O DATA TO W
    ORK WITH YET!"     :REM*99
191Ø SLEEP2:RETURN     :REM*194
192Ø PRINT"{2 HOMEs}{CTRL 9}{8
    SPACEs}{SHFT P}RESS {SHFT
    E}{SHFT S}{SHFT C}{SHFT A}
    {SHFT P}{SHFT E} TO CONTIN
    UE{8 SPACEs}"      :REM*246
193Ø GETKEYA$:IFA$<>E$THEN193Ø
                       :REM*78
194Ø RETURN            :REM*42
195Ø PRINT"{SHFT CLR}{SHFT S}AV
    E AS{2 SPACEs}"FF$:IFTZ<1T
    HEN19ØØ            :REM*166
196Ø INPUT"{HOME}{7 CRSR RTs}";
    FF$                :REM*244
197Ø FK$=FF$+".BAK"    :REM*184
198Ø SCRATCH (FK$)     :REM*17Ø
199Ø RENAME (FF$) TO (FK$)
                       :REM*44
2ØØØ IFDSTHENDCLEAR    :REM*253
2Ø1Ø PRINT"{SHFT CLR}{SHFT S}AV
    ING..."            :REM*132
2Ø2Ø DOPEN#2,(FF$),W:PRINT#2,TZ
                       :REM*244
2Ø3Ø FORT=ØTOTZ:CHAR,1Ø,Ø,STR$(
    T)                 :REM*223
2Ø4Ø PRINT#2,TM$(T)     :REM*88
2Ø5Ø PRINT#2,TW(T)      :REM*24
2Ø6Ø PRINT#2,TL(T)      :REM*2Ø4
2Ø7Ø PRINT#2,PR(T)      :REM*228
2Ø8Ø PRINT#2,TT(T)       :REM*9
2Ø9Ø NEXT              :REM*164
21ØØ DCLOSE             :REM*89
211Ø RETURN            :REM*196
212Ø PRINT"{2 HOMEs}{SHFT CLR}{
    CTRL 2}{CTRL 9}{SHFT U}SE
    {LEFT ARROW} AS 1ST CHAR T
    O ESCAPE{CRSR DN}":DIRECTO
    RY"RK.*"           :REM*93
213Ø TY=TZ             :REM*142
214Ø PRINT"{HOME}{CRSR DN}{COMD
     8}"TAB(14)FF$     :REM*13
215Ø INPUT"{HOME}{CRSR DN}{SHFT
     W}HICH LEAGUE";A$ :REM*79
216Ø IFLEFT$(A$,1)="{LEFT ARROW
    }"THEN229Ø         :REM*184
217Ø FF$=A$:DOPEN#2,(FF$):INPUT
    #2,TZ:PRINT"{SHFT CLR}"TZ
                       :REM*123
218Ø IFDSTHENPRINT"{SHFT CLR}{C
    TRL G}":DCLEAR:GOTO226Ø
                       :REM*62
219Ø PRINT"{SHFT CLR}{SHFT L}OA
    DING..."           :REM*66
22ØØ FORT=ØTOTZ:CHAR,1Ø,Ø,STR$(
    T)                 :REM*4
221Ø INPUT#2,TM$(T),TW(T),TL(T)
    ,PR(T),TT(T)       :REM*136
222Ø NEXT               :REM*39
223Ø DCLOSE            :REM*219
224Ø FORT=TZ+1TOTY:TM$(T)="":TW
    (T)=Ø:TL(T)=Ø:PR(T)=.5:TT(
    T)=Ø:RA(T)=Ø:NEXT  :REM*1Ø1
225Ø IN=1:SO=Ø          :REM*31
226Ø GOTO171Ø          :REM*2Ø
227Ø PRINT"{SHFT CLR}{SHFT A}RE
     YOU SURE?{2 SPACEs}{SHFT
    Y}/{SHFT N}"       :REM*43
228Ø GETKEYA$:IFA$<>"Y"THENP=Ø
                       :REM*136
229Ø RETURN            :REM*137
23ØØ PRINTE$"M{2 HOMEs}{SHFT CL
    R}"LC$CHR$(11)     :REM*254
231Ø CHAR,Ø,Ø,"{CTRL 6}{11 SPAC
    Es}{SHFT C}-128 {SHFT T}EA
    M {SHFT R}ANKER{12 SPACEs}
    ",1                :REM*5
232Ø CHAR,Ø,2,"{COMD 6}{SHFT F}
    ILE:"+FF$          :REM*223
233Ø CHAR,15,5,"{CTRL 2}..{SHFT
     O}PTIONS..",1     :REM*2Ø8
234Ø CHAR,15,6,"{COMD 8}1-{SHFT
     T}EAMS ({SHFT T})",1
                       :REM*168
235Ø CHAR,15,7,"{COMD 5}2-{SHFT
     S}CORES({SHFT S})",1
                       :REM*12
236Ø CHAR,15,8,"{COMD 8}3-{SHFT
     P}RINT ({SHFT P})",1
                       :REM*185
237Ø CHAR,15,9,"{COMD 5}4-{SHFT
     R}ANK{2 SPACEs}({SHFT R})
    ",1                :REM*115
238Ø CHAR,15,1Ø,"{COMD 8}5-{SHF
    T V}IEW{2 SPACEs}({SHFT V}
    )",1               :REM*39
239Ø CHAR,15,11,"{COMD 5}6-{SHF
    T S}AVE{2 SPACEs}({SHFT A}
    )",1               :REM*71
24ØØ CHAR,15,12,"{COMD 8}7-{SHF
    T L}OAD{2 SPACEs}({SHFT L}
    )",1               :REM*11
241Ø CHAR,15,13,"{COMD 5}8-{SHF
    T N}EW{3 SPACEs}({SHFT N})
    ",1                :REM*72
242Ø CHAR,15,14,"{COMD 8}9-{SHF
    T Q}UIT{2 SPACEs}({SHFT Q}
    )",1               :REM*16Ø
243Ø RETURN             :REM*6
244Ø A=Ø:A$="":AD=Ø:B=Ø:CP=Ø:CU
    =Ø:CZ=Ø:H=Ø:HA=Ø:HH=Ø:HI=Ø
    :K=Ø:KY$=""        :REM*255
245Ø LT=Ø:P=Ø:PD=Ø:R=Ø:R1=Ø:R2=
    Ø:S=Ø:SB=Ø:SC=Ø:SC$="":T=Ø
    :T$="":TP=Ø        :REM*235
246Ø UU=Ø:WT=Ø:X=Ø:Y=Ø:TZ=-1:SO
    =Ø:IN=Ø:TX=Ø:FF$="RK.":FF=
    Ø:E$=CHR$(27)      :REM*5
247Ø FK$="":FL=Ø:R$="":RR=Ø:S$=
    "":T1=Ø:TS=Ø:TT=Ø:TY=Ø:YY=
    Ø                  :REM*141
248Ø DIM PR(4ØØ),TM$(4ØØ),TM(4Ø
    Ø),TC(4ØØ),TW(4ØØ),TL(4ØØ)
    ,TT(4ØØ),RR(4ØØ),RA(4ØØ),T
    (1)                :REM*25
249Ø KY$="TSPRVALNQ"+CHR$(13)+E
    $                  :REM*117
25ØØ DA$(Ø)="{SHFT R}ECORD":DA$
    (1)="{SHFT R}ANK{2 SPACEs}
    ":DA$(2)="{SHFT P}OWER "
                       :REM*11
251Ø LC$=CHR$(14)      :REM*24
252Ø RETURN            :REM*1Ø8 ■
```

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RUN's Checksum Program and Typing Hints

By BOB KODADEK and the *RUN* EDITORIAL STAFF

CHECKSUM IS A PROGRAM that proofreads your typing when you enter a listing from the magazine. It assigns a numerical value to each character that you type, adds up the values of the line you typed and displays the sum. (Checksum, therefore, means that it *checks* your typing by *summing* the characters.) It also verifies that you have typed the characters in the proper order. (Checksum won't tell you if you miss a line of code entirely, so verify that yourself.)

Checksum runs in the background when you type in lines of programming code. Whenever you type a line and press RETURN, the Checksum will display a value. Compare that value to the value published next to the line of code in the magazine (eg., :REM*123). If the numbers match, you've typed the line correctly. Simple.

Typing in Checksum and Other Good Advice

First, type in Checksum carefully from Listing 1 below. Be sure to press RETURN after every line to enter it into memory. Once you have typed the program, save it. In fact, save it a few times while you're typing, just to be safe. (This is good advice whenever you type in a program. I usually change the name each time I save; for example, Supergame1, Supergame2, and so on.)

Double check your work, making sure that you've typed in every line, and you've pressed RETURN after every line you've typed. If you make errors when typing in Checksum, a test run of Checksum will tell you which line is incorrect. (This safety feature works only in the Checksum program itself. It does not apply to any other listings in the magazine.) Whenever you find a typing error (in any program listing), fix it, press RETURN to enter the change, *save the program again*, and try another run. Repeat as often as necessary.

Important tip: Don't get discouraged if the program won't run. Be patient. Be thorough. It will work eventually.

You'll know your Checksum is ready when you see the line

```
TO TOGGLE ON OR OFF, SYS{number}
```

Using Checksum and Even More Good Advice

When you're ready to type in your first listing from the magazine, load and run Checksum. Make a note of the number that is displayed on the screen (49152 for the C-64; 3328 for the C-128). To activate and deactivate Checksum, type SYS followed by that number, then press RETURN. You need to have Checksum active whenever you're typing in a listing. Checksum must be deactivated, however, when you run the new program.

The next step is typing in a new program listing as it appears in the magazine. As you begin, you'll notice that at the end of each line is a colon, followed by the letters REM, an asterisk and a 1–3 digit number, like this:

```
:REM*123
```

Don't type any of this in: It's simply the Checksum value. Stop typing before the colon and press RETURN. If you've typed the line correctly, the number displayed on the screen will match the Checksum value. If the numbers don't match, you've made a mistake. Check the line carefully, make your changes and press RETURN. The computer won't know you've made a change unless you press RETURN to enter it.

A few type-in hints: The Checksum does not verify blank spaces in the program lines unless they are within quotation marks, because adding or omitting such spaces will not affect the operation of the program. The exception to this is hexadecimal Data statements. These are the Data statements, such as this one, that don't have commas:

```
100 DATA 12345678901234567890*12345678901234567890*123
    45678901234567890*
```

In statements such as these, you must have one space between the word DATA and the numbers that follow. Checksum will not catch that error. One other common mistake is to type in the spaces that fall under the line number. In the example above you should not put a carriage return or spaces between the 3 and the 4 where the line breaks.

What the Heck Are Curly Braces?

As you type, you will undoubtedly be confused the first time you see curly braces {}. These braces mean "perform the function explained within." For example, {22 SPACES} means that you need to press the space bar 22 times. Don't type the braces. Other common examples are:

{SHIFT CLR}—hold down the SHIFT key and press the CLR-HOME key.
{2 CRSR DNs}—tap the cursor down key twice.
{CTRL 1}—hold the CONTOL key and press the 1 key.
{COMD T}—hold down the COMMODORE key and press the T key.
{5 LB.s}—press the British pound key (£ not #) 5 times.

Keep Your Chin Up—All You Need Is Patience

Continue typing in your program, saving often and checking each checksum value with the one in the magazine, until you've finished the listing. Phew! So now you're ready to run your program, right? Not quite. First, save it. Second, deactivate Checksum by typing SYS followed by 49152 for the C-64 or 3328 for the C-128.

Now you can run. Don't be discouraged if you still get an error. It happens. There are only two errors that Checksum won't catch (omitting a line and the Data statement spaces). Use Checksum faithfully. Be patient. Be thorough. It will work eventually. R

Listing 1. RUN's Checksum program.

```
10 REM RUN'S CHECKSUM 64/128 - BOB KODADEK
20 MO=128:SA=3328:IF PEEK(40960)THEN MO=64:SA=49152
30 I=0:CK=0:CH=0:LN=190
40 FOR K=0 TO 16
50 FOR J=1 TO 10:READ B:IF B>255 THEN GOTO 170
60 CH=CH+B:POKE SA+I,B:I=I+1:NEXT
70 READ LC
80 IF LC<>CH THEN GOTO 170
90 CH=0:LN=LN+10
100 NEXT K
110 POKESA+110,240:POKESA+111,38:POKESA+140,234
120 PRINTCHR$(147)STR$(MO)" RUN CHECKSUM":PRINT
130 PRINT"TO TOGGLE ON OR OFF, SYS"SA:IF MO=128 THEN 1
    60
140 POKESA+13,124:POKESA+15,165:POKESA+25,124:POKESA+2
    6,165
150 POKESA+39,20:POKESA+41,21:POKESA+123,205:POKESA+12
    4,189
160 POKESA+4,INT(SA/256):SYS SA:NEW
170 PRINT"YOU HAVE A DATA ERROR IN LINE ";LN;"!":END
180 REM DO NOT CHANGE THESE DATA STATEMENTS!
190 DATA 120,162,24,160,13,173,4,3,201,24,884
200 DATA 208,4,162,13,160,67,142,4,3,140,903
210 DATA 5,3,88,96,32,13,67,152,72,169,697
220 DATA 0,141,0,255,133,176,133,180,166,22,1206
230 DATA 164,23,134,167,132,168,170,189,0,2,1149
240 DATA 240,58,201,48,144,7,201,58,176,3,1136
250 DATA 232,208,240,189,0,2,240,42,201,32,1386
260 DATA 208,4,164,180,240,31,201,34,208,6,1276
270 DATA 165,180,73,1,133,180,230,176,164,176,1478
280 DATA 165,167,24,125,0,2,133,167,165,168,1116
290 DATA 105,0,133,168,136,208,239,232,208,209,1638
300 DATA 169,42,32,210,255,165,167,69,168,170,1447
310 DATA 169,0,32,50,142,169,32,32,210,255,1091
320 DATA 32,210,255,169,13,32,210,255,104,168,1448
330 DATA 96,104,170,24,32,240,255,104,168,96,1289
340 DATA 56,32,240,255,138,72,152,72,24,162,1203
350 DATA 0,160,0,32,240,255,169,42,208,198,1304
```

■

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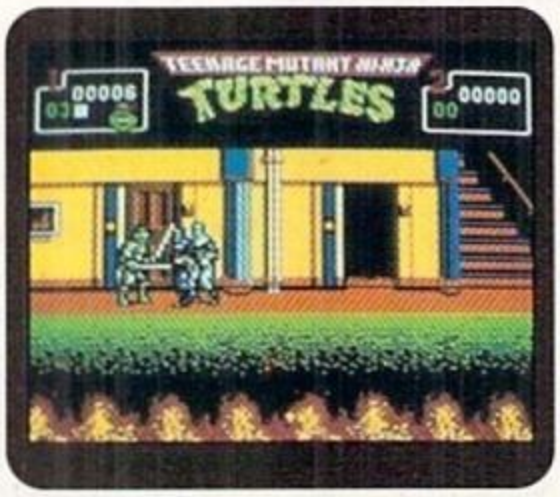
From p. 8.

like a dervish on the half shell.

The object, of course, is to fight your way through all eight levels, racking up points along the way. You only have three lives to begin with, but defeating each level's powerful enemy (and finding pizza to eat) can patch up a lot of damage accumulated during the game. This version allows you three "continues" if you die, after which you'll have to start the game over.

There are several noteworthy differences between the C-64 version and the arcade version. The most annoying? You cannot play two or more turtles at once. In two-player mode (if you want to call it that) two players take turns moving through each level—hardly a cooperative effort.

The background graphics, nicely drawn and colorful, generally follow those of the arcade version. The C-64's turtles are small and not as nimble as you may be used to. While the joystick operation is okay, you'll find the turtles' response just a wee bit sluggish. Unlike the arcade version, you cannot jump-kick and change direction in midair; this can be important if you're being swarmed by the Foot Clan. On the plus side, there doesn't seem to be as many enemies to contend with in this version.



Leonardo slashes through Shredder's henchmen in the Turtles Arcade Game.

Also on the plus side is the game's great soundtrack. Soundtracks and sound effects have become a hallmark of Konami's C-64 games.

This is one of those games that really doesn't require much documentation, especially if you've played other versions. Moreover, fast load routines keep disk access times relatively short and painless. With its fast, colorful graphics, humorous atmosphere and superb replayability, TMNT is pretty cool, dude!

($49.95/C-64. Konami, 900 Deerfield Parkway, Buffalo Grove, IL 60089-4510)

THE BLUES BROTHERS .....A

Pardon me, Ma'am, We're on a Mission From God

The boys are back in town—Jake and Elwood, the best known brothers of white-boy blues since Stevie Ray and Jimmy Vaughan. They've arrived for a

SWAP.....B

High Scores Aren't Everything in This Game from Titus

I love logic puzzles, so when Swap crossed my desk this spring, I tore into it. I opened the manual and read, "The human brain weighs about 1.3kg. It is more mysterious than the center of the atom, and less understood than the Big Bang...." Immediately, I tossed the book aside and booted up the game—with an introduction like that, I knew Swap was going to be different.

As it happens, I was right.

In Swap, there are no bad guys to kill, no treasures to find, and the computer skips you quickly past elementary levels if you perform well. The basic idea is simple: You clear a playing board by clicking on adjacent tiles. The tiles swap places with each click, and when you get tiles of like color next to each other, they disappear. At higher levels, a time limit pushes you to work faster, while earned credits and smaller tiles make advancing more difficult.

Even so, the game is simple to play, and within a half hour of opening the box I had figured out shortcuts (like the avalanche feature, which drops all of the tiles to the bottom of the screen), and, already at level 23, I was growing bored. (A few key swaps, an avalanche or two, and I was qualified for the next level. Big, fat, hairy deal!) A bit disappointed, I returned to the manual.

There I found the answer: I needed to approach Swap differently. Instead of taking the quickest route to the next level, I should have concentrated on clearing the board—solving the puzzle, if you will.

When viewed in this light—as a purely mental challenge—Swap shines brightly. To "solve" the various levels, you must approach the board methodically, considering the number and shape of the tiles, and looking for patterns within the board. If you want to set up specific challenges, all the better—Swap's Practice mode lets you set up the board with a selection of variables. The manual even gives a sample challenge. In this regard, Swap has tremendous staying power.

The program has excellent graphics and adequate conrols through all of the lower levels. As you advance, though, the tiles become smaller, and it is occasionally difficult to position your joystick pointer in the correct spot.

If you enjoy the mental gymnastics of solving logic puzzles, try Swap.

My biggest gripe with Swap, fortunately, can be easily overlooked: scoring. The "points" I scored with each level seemed to have little relation to the speed with which I cleared the board. (This, of course, contributed to my initial frustration: Where's the fun if you can't rack up points and win the game?)

The programmers obviously took pains to create a scoring mechanism that takes into account the intricate nature of the puzzles. Unfortunately, that mechanism is not explained in the manual, which left me wondering—Is it better to work quickly, or to work logically? Should I use extra tiles to clear the board completely, or should I simply go on to the next level?

The answer is simple: Ignore the scores, enjoy the challenge. In fact, I recommend abandoning the competition mode altogether.

To programmers, mathematicians, Mensans, and other puzzle-solvers, Swap will provide endless hours of unusual entertainment. If, however, you need the thrill of victory to drive your interest, I suggest you look elsewhere.

($39.95/C-64. Titus Software, 20432 Corisco St., Chatsworth, CA 91311)

—Janice Crotty
New Products Editor

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big show, complete with Rubber Biscuit, but their instruments have been stolen and the sheriff wants them out of town.

Do they listen? Of course not. These are the Blues Brothers.

And you—as either Jake or Elwood—must guide your man through five groovin' levels of high-rise buildings, chutes, ladders and other obstacles. This is Super Mario with sunglasses and a worn out fedora.

Using a joystick, you must climb, jump, scoot, swim and stumble your way through each level in search of the piece of equipment associated with that level, with full-screen graphics detailing your surroundings. Along the way, you'll find bad guys who want to put a serious hurt on you—monsters and madmen alike—with names like Crazy Doc, Banana Split, Herman and Big Dug. While you don't have weapons, you can pick up boxes and toss them. One good hit and you're own your way.

The Blues Brothers is like Super Mario with a worn out fedora and a pair of shades.

Blues Brothers presents you with graphics screens that are *very* busy. There's a lot going on here. Bad guys move back and forth. Elevators move up and down. Escalators escalate. Flying critters bomb you. There are balloons and umbrellas galore to lift or float you to safety. There are fences to climb over, springs to bounce on, ladders galore...I think you get the picture.

Blue Brothers starts at a frantic pace and never lets up. If you loved Mario Brothers, Donkey Kong or the classic Jump Man, then you'll absolutely revel in this game. The smoothly scrolling screens are colorful, lively and, admittedly, plain fun to get around in. In fact, I was having such a good time moving up and down elevators and swimming through water tanks that I was loath to move further into the game.

And what would the Blue Brothers be without the blues? Throughout the game, musical soundtracks accompany your frantic race through town. And, of course, Konami's usual superb job on sound effects are evident throughout.

There's certainly nothing about the Blue Brothers to complain about. It's fast, pretty to look at, and plenty of fun to play. This is, perhaps, one of the best arcade games to come down the pike for the C-64 in a long while. So grab your sunglasses, put on your G-man suit and get a firm hold on the joystick. The Blues Brothers are comin' to take you for a ride.

($39.95/C-64. Titus Software, 20432 Corisco St., Chatsworth, CA 91311)

TONY LA RUSSA'S ULTIMATE BASEBALL.....A

Put This Simulation on the Top of Your Roster

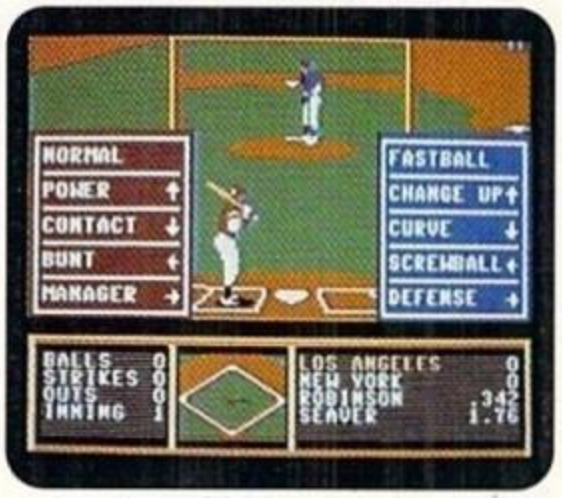
I've always taken a dim view of software with the word *ultimate* stuck somewhere in the title. It seems arrogant. And, like arrogant people, these games typically don't live up to their self-styled reputation. Thankfully, I found that Tony La Russa's Ultimate Baseball can afford its ostentatious title—this baseball simulation is one of the finest I've played.

Some simulations give you great graphics, but little control over managerial decisions; others give you a lot of statistics and managerial control, but fall short in the graphics department. Tony LaRussa has hit on the right mix.

Let's talk about the graphics first. Great stuff—full-screen graphics with a huge, very detailed ball park. I was impressed with how quickly the detailed high-resolution screen scrolls to and fro as the action unfolds. The park takes up over two-thirds of the screen, and even then it's only a portion of the entire field. The lower screen shows a score box, a small overhead diagram of the park and an information window. A close-up of the pitcher and batter overlays the main screen during batting sequences. When a player hits the ball, the window disappears and a full-screen animation details the play in full. If your team is on defense, the fielder closest to the ball (unless it's a home run) will move toward the play. If you're batting, you'll obviously be moving your runner around the bases.

The controls are very easy to use. Each player on the roster has his own stats and abilities; this is not a simulation where brute joystick strength is the deciding factor. All of the options are available throughout the game by summoning pop-up menus. Pitchers can not only throw the standard pitches, they can also serve up knuckle balls, sliders and screwballs. They can throw high or low, inside or outside—all accomplished by moving the joystick. Tony LaRussa even lets you pick off a runner who's led himself too far from base. In the same manner, batters can bunt, power swing or choke up on the bat.

When it comes to managing your team, the pop-up windows let you direct both teams. You can send your manager to the mound and check the pitcher's condition. Likewise, you can change pitchers, send them to the bullpen or back to the bench. You can make changes to the infield and outfield, instructing players to play back or play in, hold runs or play off base runners. The managing options for both teams go on and on.



The possibilities for matching up teams are astounding in this exceptional simulation.

Above all, this game is easy to use. Game play is so smooth and intuitive, in fact, that the documentation is incidental. Rarely will you find a simulation that can make such a claim.

There are twenty-six teams from both conferences available, including some of the biggest names in baseball—all with statistics. You can select the starting lineup and batting order of your teams, or allow the computer to do it for you.

If you get bored with the teams provided, you can purchase separate team disks such as Great Teams 1901–1968. The disk contains historically accurate statistics and rosters from the best teams in history. You'll find Chicago, 1906, Baltimore, 1969 and more. The possibilities for matchups are astounding.

Whether you're a baseball fanatic with a closet full of trading cards, or a connoisseur of simulation games, you'll find this baseball simulation on the top of your roster. Tony LaRussa is one of the few games I have ever played that truly deserves the often used, much abused moniker, ULTIMATE.

($49.95/C-64. SSI, 675 Almanor Ave., Suite 201, Sunnyvale, CA 94086) ■

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CURTAIN CALL

***RUN*'s column where worthy products step into the spotlight and take a bow.**

Star Micronics NX-2430

Traditionally, when Commodore users purchase a printer, they have to choose between low price and nice print features. Typically, the low price wins. Thanks to rapid advancements in printer technology, there's no longer a need to sacrifice features for price. The so-called "low-end" printers of 1992 sport more features than you could get even on the expensive printer models of 1990.

At a suggested retail price of $399, the Star Micronics NX-2430 is a luxury printer for the budget-minded consumer. This printer abounds with features, produces crisp output (see sample printout, bottom right) and works well with your Commodore when combined with an interface such as the Xetec Super Graphix.

Star Micronics printers of both the 9- and 24-pin variety have traditionally been plagued by lighter-than-acceptable printing. Apparently, Star Micronics has heeded the criticism, because the NX-2430 has dark, well-defined printing in nearly all of its modes, including 24-pin graphics mode. And, let me say, this printer has *many* modes.

The NX-2430 offers nine fonts in its Letter Quality print mode (not to be confused with the Near Letter Quality print mode available on 9-pin printers). It can print graphics in densities ranging from 60 to 360 dpi. And, it features a staggering number of print options. In fact, the NX-2430 is the most option-laden printer I've used in recent memory.

All of the print modes are accessible through either the printer's control panel or through software control codes. The NX-2430 sports an LCD menu display window, similar to those found on laser printers. Still, the most impressive feature of the the control panel is the EDS (Electronic DIP Switch) mode. When the "EDS" message appears in the LCD window, you can use the control panel to make printer emulation changes that require DIP switch settings on most other dot-matrix printers.

For example, with EDS mode, you can toggle between Epson LQ-850 and IBM modes, Auto linefeed with carriage return, graphics direction (bi- or unidirectional) printing, and an Auto Emulation Change (AEC) option.

Regarding print speed, the NX-2430 does not disappoint. Its 240 character-per-second printing is above average, and the overall output is faster than its competition in nearly every mode, particularly graphics modes.

Paper handling is first rate, and includes tractor-feed sprockets for continuous labels and forms. A paper guide is included for single sheets, as well as a "mute cover" to reduce noise.

This is a top-notch printer, and a good bargain for Commodore users who want to print graphics, newsletters, or professional documents. ■

—Tim Walsh

This low-cost 24-pin printer quickly delivers crisp output in all of its many modes.

Roman font on the Star Micronics NX-2430.

Prestige font on the Star Micronics NX-2

Courier font on the Star Micronics NX-

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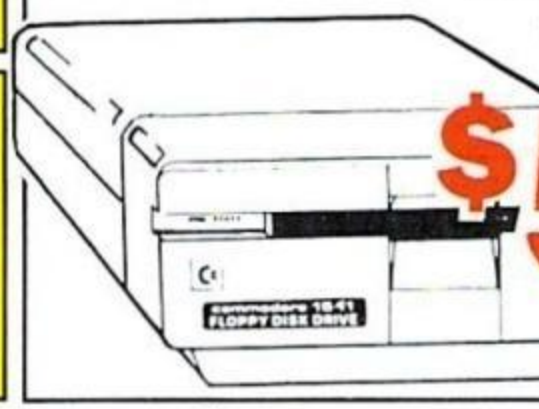

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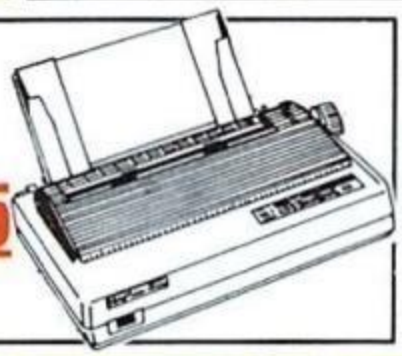

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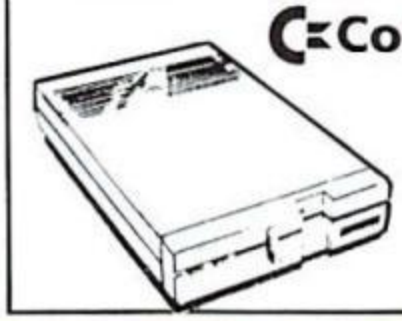

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